This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

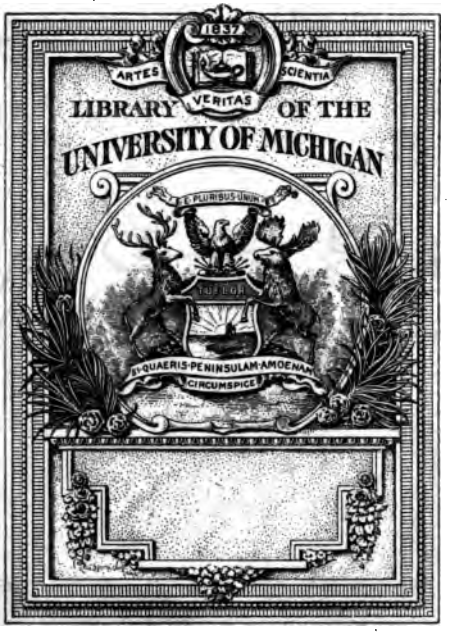
+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

A 413860


1837
ARTES
SCIENTIA
VERITAS
LIBRARY OF THE
UNIVERSITY OF MICHIGAN
E PLURIBUS UNUM
SI QUAERIS PENINSULAM AMOENAM
CIRCUMSPICE

610.5
037
S8n

Sincerely yours

Dan Gillikin, Jr.

TRANSACTIONS

OF THE

123096

FIFTY-FIRST ANNUAL MEETING

OF THE

Ohio State Medical Society

HELD AT

COLUMBUS,

MAY 27, 28 AND 29, 1896.

TOLEDO, OHIO:
THE BLADE PRINTING AND PAPER CO
1896.

The Fifty-Second Annual Meeting

OF THE

Ohio State Medical Society

Will be held in Cleveland.

May 19, 20 and 21, 1897.

OFFICERS FOR 1896-7.

F. C. LARIMORE, M. D., Mt. Vernon, - - President.
M. STAMM, M. D., Fremont, - - - - Vice-President.
C. F. CLARK, M. D. Columbus, - - - Vice-President.
JOHN S. BECK, M. D., Dayton, - - - - Vice-President.
GEORGE W. CRILE, M. D., Cleveland, - - Vice-President.
THOMAS HUBBARD, M. D., Toledo, - - - - Secretary.
H. M. W. MOORE, M. D., Columbus, - - Asst. Secretary.
JAMES A. DUNCAN, M. D., Toledo, - - - - Treasurer.

STANDING COMMITTEES.

FINANCE.

F. C. GRAY, M. D., 1892. N. P. DANDRIDGE, M. D., 1894.
E. B. FULLERTON, M. D., 1893. J. G. F. HOLSTON, M. D., 1895.
H. J. HERRICK, M. D., 1896.

ETHICS.

CHAS. L. VAN PELT, M. D., 1892. F. C. LARIMORE, M. D., 1894.
J. H. LOWMAN, M. D., 1893. J. C. REEVE, Sr., M. D., 1895.
THOMAS C. HOOVER, M. D., 1896.

PUBLICATION.

C. N. SMITH, M. D., 1892. J. P. SAWYER, M. D., 1894.
J. C. OLIVER, M. D., 1893. R. HARVEY REED, M. D., 1895.
F. D. BAIN, M. D., 1896.

F. C. LARIMORE, M. D., *ex-officio*. C. N. SMITH, M. D., Editor.

LEGISLATION.

C. E. BEARDSLEY, M. D., 1892. W. D. HAMILTON, M. D., 1894.
J. F. BALDWIN, M. D., 1893. GEO. A. COLLAMORE, M. D., 1895.
CHAS. GRAEFE, M. D., 1896.

ADMISSION AND MEDICAL SOCIETIES.

A. R. BAKER, M. D., 1892. W. C. CHAPMAN, M. D., 1894.
C. D. NOBLE, M. D., 1893. A. B. RICHARDSON, M. D., 1895.
J. A. THOMPSON, M. D., 1896.

OHIO STATE MEDICAL SOCIETY.

At the Seventeenth Annual Meeting of the Ohio State Medical Society, the following resolution was adopted :

Resolved, That the publication of any address, prize essay, or other paper, by this Society, is no evidence of its endorsement of the sentiments therein contained.

Fifty-first Annual Convention

of the

Ohio State Medical Society,

May 27, 28 and 29, 1896.

Columbus, May 27, 1896.

The Society was called to order at 2:15 P. M. in the hall of the House of Representatives, Dr. Dan Millikin, President, occupying the chair.

The President: In addition to the pleasure it gives me to open the fifty-first session of this Society, I have the honor of introducing to you Judge Gilbert Barger, of this city, who will deliver the address of welcome.

Judge Gilbert Barger: In the absence of the Mayor to-day, it is my pleasure to extend to you a word of welcome to this city.

We are told in mythology that Æsculapius was the god of the healing art. He was represented as the son of Apollo and the nymph Coronis. He is usually pictured as an old man with a flowing beard, grasping the head of a serpent and holding a staff. His age typified wisdom and experience, his grasp upon the head of the serpent was intended to illustrate his power over pain

and suffering, the power to prevent, to cure and alleviate. Medicine has been defined to be that branch of science which relates to the prevention, cure or alleviation of the diseases of the human body. Truly, yours is a noble science, one in which all mankind has a deep and abiding interest. To prevent disease, or cure the afflicted, or even alleviate the pain and suffering of those who are beyond professional aid or skill, ought to be ranked with the highest of human efforts and evoke the best intellectual effort of man.

You meet here to-day to exchange professional views, so that discoveries and beneficial results in medicine and surgery may become the joint property of your profession and the public. I need not tell you with what intense interest the world at large watches the results of your labors, and how often the professional fee is but a small part of your reward. For pain alleviated, life saved, maimed and crippled limbs made whole, there ought to be and is something more due you than professional reward. And this is manifest in the heartfelt thanks of a fond mother, suffering, patient and anxious friends, when tears have been wiped away, clouds dispelled and hope realized.

Coming to our city for the purpose indicated, it would be strange indeed if you were not welcome, thrice welcome. Then, upon behalf of our city, the whole city, I am authorized to extend that welcome, and with it the hope that your stay may be pleasant and your labors beneficial to your profession and mankind.

The report of the Committee of Arrangements was made by Dr. R. Harvey Reed.

REPORT OF THE SECRETARY.

The total number of permanent members has more than doubled since 1893. There are now about

eight hundred and eighty-three permanent and life members. The yearly distribution of Transactions amounts to about nine hundred, including exchanges, and since those who do not pay dues receive no copies, this is evidence that our list is not swelled by delinquents.

The number of auxiliary societies remains about the same. There are forty-six which maintain an active affiliation with the State Society. It would be desirable to have certain modifications of the provisions for election of auxiliary societies. An amendment to the Constitution should be made to the effect that applications to become auxiliary should be filed with the Secretary at least one month prior to the date of meeting and a list of societies applying be published on the annual program and distributed to all members of the State Society.

The mailing-list of the Secretary includes all members reported by local secretaries of local, county and district societies. It has increased from 2,000 in 1893 to about 3,400, more than one-half of the total number of physicians in the State who claim to be regulars.

LIST OF AUXILIARY SOCIETIES.

1. Academy of Medicine of Cincinnati.—President, S. C. Ayres, M. D., 64 W. 7th Street; 1st Vice-President, R. B. Hall, M. D.; 2d Vice-President, C. R. Holmes, M. D.; Recording Secretary, W. E. Schenk, M. D., 65 W. 7th Street; Corresponding Secretary, J. A. Johnston, M. D.; Treasurer, G. E. Jones, M. D.; Financial Secretary, R. W. Stewart, M. D.; Librarian, J. C. Culbertson, M. D.

2. Adams County Medical Society.—President, W. K. Coleman, M. D., West Union; Vice-President, R. A. Stevenson, M. D.; Secretary, James W. Bunn, M. D., West Union; Treasurer, O. B. Kirkpatrick, M. D.

3. Allen County Medical Society.—President, D. E. Matteson, M. D., Lima; Vice-President, H. C. Bennett, M. D; Secretary, E. E. McCall, M. D., Lima.

4. Ashland County Medical Society.—President, J. P. Cowan, M. D. (deceased); Vice-President, P. H. Clark, M. D.; Secretary, R. C. Kinnaman, M. D., Ashland; Treasurer, D. S. Sampsel, M. D.

5. Belmont County Medical Society.—President, J. C. Workman, M. D., Uniontown; Vice-President, A. H. Korner, M. D.; Secretary, W. O. Huston, M. D., Bellaire; Treasurer, G. H. Colville.

6. Brown County Medical Society.—President, Thomas W. Gordon, M. D., Georgetown; Vice-President, W. A. Dixon, M. D.; Secretary, L. Markley, M. D., Georgetown; Treasurer, A. M. Ellsberry, M. D.

7. Butler County Medical Society.—President, Mark Millikin, M. D., Hamilton; Vice-President, H. H. Carter, M. D.; Secretary, John Francis, M. D., Hamilton; Treasurer, F. M. Fitton.

8. Central Ohio Medical Society.—President, R. H. Henry, M. D., Columbus; Vice-President, J. A. Linebough, M. D.; Secretary, E. M. Hatton, Y. M. C. A., Columbus; Treasurer, W. H. H. Nash.

9. Champaign County Medical Society.—President, S. M. Mosgrove, M. D., Urbana; Vice-President, H. B. Hunt, M. D.; Secretary, E. W. Ludlow, M. D., Urbana; Treasurer, Robert Henderson, M. D.

10. Clarke County Medical Society.—President, J. G. Kennan, M. D., Springfield; Vice-President, B. G. Titlow, M. D.; Secretary and Treasurer, W. A. Smith, M. D., Springfield.

11. Clermont County Medical Society, 1895.—President, J. S. Coombs, M. D., Owensville; Vice-President, Isaac Redron, M. D.; Secretary, M. I. Marsh, M. D., Owensville; Treasurer, P. Kennedy, M. D.

12. Columbus Academy of Medicine.—President, J. E. Brown, M. D., Columbus; Vice-President, D. L. Moore, M. D.; Secretary, H. M. Platter, M. D., Columbus; Treasurer, F. W. Blake, M. D.

13. Crawford County Medical Society.—President, H. S. Bevington, M. D., Sulphur Springs; Secretary, L. Kemp, M. D., Bucyrus.

14. Cuyahoga County Medical Society.—President, O. B. Campbell, M. D., Cleveland; Vice-President, G. C. Russell, M. D.; Secretary, B. F. Oswald, M. D., Cleveland; Treasurer, L. S. Chadwick, M. D.

15. Eastern Ohio Medical Society.—President, Y. A. Colville, M. D., Harrisville; Vice-President, W. M. Calhoun, M. D.; Secretary and Treasurer, J. C. M. Floyd, M. D., Steubenville.

16. Erie County Medical Society.—President, A. F. Cook, M. D.; Vice-President, R. D. Sykes, M. D.; Secretary and Treasurer, Chas. Graefe, M. D., Sandusky.

17. Fayette County Medical Society.—President, B. T. Kellar, M. D., Bloomingburg; Vice-President, G. W. Blakely, M. D.; Secretary, E. M. Boggess, M. D., Washington C. H.; Treasurer, J. N. Clark, M. D.

18. Green County Medical Society.—President, S. A. Cunningham, M. D., Cedarville; Secretary, W. H. Fiedley, M. D., Xenia; Treasurer, T. W. Trehearne, M. D.

19. Hancock County Medical Society.—President, M. S. Williamson, M. D., Findlay; Vice-President, N. L McLachlan, M. D.; Secretary, J. E. Powell, M. D., Findlay; Treasurer, D. C. Hughes, M. D.

20. Hempstead Memorial Academy.—President, O. C. Andre, M. D., Waverly; Vice-President, Wells Teachnor, M. D.; Secretary, M. S. Pixley, M. D., Portsmouth; Treasurer, D. B. Colton, M. D.

21. Highland County Medical Society.—President, W. W. Glenn, M. D., Hillsboro; Vice-President, J. A. Matthews, M. D.; Secretary, T. W. Roberts, M. D., Bell; Treasurer, H. M. Brown, M. D.

22. Holmes County Medical Society.—President, F. J. Guittard, M. D., New Bedford; Secretary and Treasurer, D. S. Olmstead, M. D., Millersburg.

23. Jefferson County Medical Society.—President, B. H. Fisher, M. D., Steubenville; Secretary and Treasurer, A. A. Elliott, M. D., Steubenville.

24. Mahoning County Medical Society.—President, J. E. Cone, M. D., Youngstown; Vice-President, H. E. Welch, M. D.; Secretary, R. E. Whelan, M. D., Youngstown; Treasurer, R. D. Gibson, M. D.

25. Marion County Medical Society.—President, W. C. Denman, M. D., Marion; Vice-President, J. I. King, M. D.; Secretary, H. Chisholm, M. D., Marion; Treasurer, H. L. Uhler, M. D.

26. Miami Valley Medical Society.—President, E. J. Tichenor, M. D., Lebanon; Vice-President, J. A. Thompson, M. D.; Secretary, Con Gatch, M. D., Milford; Treasurer, W. A. Carmichael, M. D.

27. Miami County Medical Society.—President, J. H. Shellenberger, M. D., Piqua; Vice-President, J. H. Green, M. D.; Secretary, W. Coleman, M. D., Troy; Treasurer, S. D. Hoolman, M. D.

28. Muskingum County Medical Society.—President, J. L. Geyer, M. D., Norwich; Vice-President, L. C. McElroy, M. D.; Secretary and Treasurer, J. M. Fassig, M. D., Zanesville.

29. Montgomery County Medical Society.—President, D. C. Lichliter, M. D., Dayton; Vice-President, W. C. Marshall, M. D.; Secretary, E. B. Bayliss, M. D., Dayton; Treasurer, C. H. Humphreys, M. D.

30. North Central Ohio Medical Society.—President, A. H. McCollough, M. D., Mansfield; Vice-President, F. C. Larimore, M. D.; Secretary, R. F. Grubaugh, M. D., Mansfield; Treasurer, Mary J. Finley.

31. North-Western Ohio Medical Association.—President, Chas. Graefe, M. D., Sandusky; Vice-President, C. W. Phillips, M. D.; Secretary, J. P. Baker, M. D., Findlay; Treasurer, T. M. Gehrett, M. D.

32. Pike County Medical Society.—President, W. H. Hooper, M. D., Waverly; Vice-President, W. S. Jones, M. D.; Secretary, W. S. Samson, M. D., Flat; Treasurer, E. O. S. Brown, M D.

33. Portage County Medical Society.—President, A. J. Bietz, M. D., Ravenna; Secretary, H. H. Spiers, M. D., Ravenna.

34. Ross County Medical Society.—President, J. M. Leslie, M. D., Chillicothe; Vice-President, T. S. Barnes, M. D.; Secretary, Chas. Miesse, M. D., Chillicothe.

35. Sandusky County Medical Society.—President, J. W. Wilson, M. D., Fremont; Secretary, R. H. Rice, M. D., Fremont.

36. Shelby County Medical Society.—President, J. D. Geyer, M. D., Sidney; Secretary, D. R. Silver, M. D., Sidney.

37. Toledo Medical Association.—President, J. C. Reinhart, M. D., Toledo; Vice-President, W. D. Stewart, M. D.; Secretary, C. P. Wagar, M. D., Toledo; Treasurer, G. A. Collamore, M. D.

38. Trumbull County Medical Society.—President, L. G. Moore, M. D., Kinsman; Vice-President, C. S. Ward, M. D.; Secretary, J. D. Harmon, M. D., Warren; Treasurer, F. B. Miner, M. D.

39. Tuscarawas County Medical Society.—President, J. A. McCollam, M. D., Uhrichsville; Vice-President, A. M. Beers, M. D.; Secretary, Jos. Blickensderfer, M. D., New Philadelphia; Treasurer, A. T. Miller.

40. Union Medical Association of Columbiana and Adjoining Counties.—President, C. N. Hoover, M. D., Alliance; Secretary, F. T. Miles, M. D., Salem.

41. Union Medical Association of North-Eastern Ohio.—President, L. S. Ebright, M. D., Akron; Vice-President, H. S. Upson, M. D.; Secretary, L. E. Sisler, M. D., Clinton; Treasurer, Eli Conn, M. D.

42. Warren County Medical Society.—President, H. J. Death, M. D., Franklin; Vice-President, R. Michel, M. D.; Secretary, E. S. Stevens, M. D., Lebanon; Treasurer, C. A. Hough, M. D.

43. Washington County Medical Society.—President, F. E. McKim, M. D., Marietta; Vice-President, Ed. Hill, M. D.; Secretary and Treasurer, C. W. Eddy, M. D., Marietta.

44. Wayne County Medical Society, 1895.—President, W. S. Battles, M. D., Shreve; Secretary, J. D. Beers, M. D., Wooster.

45. Ashtabula, Lake and Geauga Medical Society.—President, J. A. Dickson, M. D., Ashtabula; Secretary, H. E. Whitsey, M. D., Ashtabula.

46. Gallia County Medical Society.—President, E. G. Alcorn, M. D., Gallipolis; Vice-President, E. W. Parker, M. D.; Secretary, H. V. Sanns, M. D., Gallipolis; Treasurer, L. B. Turner, M. D.

47. Hildreth District Medical Society, 1895.—President, A. T. Spear, M. D., Newark; Vice-President, J. G. McDougal, M. D.; Secretary, N. E. Patrick, M. D., Zanesville.

48. East Liverpool Medical Society.—President, W. R. Clark, M. D., East Liverpool; Vice-President, L. O. Williams, M. D.; Secretary, J. E. Toot, M. D., East Liverpool.

49. Clinton County Medical Society.—President, G. W. Wise, M. D., Wilmington; Secretary, E. Briggs, M. D., Wilmington; Treasurer, G. M. Austin, M. D.

50. Stillwater Medical Society, 1895.—President, W. A. Zellars, M. D., Freeport; Secretary, D. W. Copeland, M. D., Piedmont.

AUXILIARY SOCIETIES ELECTED IN 1896.

Cleveland Medical Society.—President, J. E. Cook, M. D.; Vice-President, G. D. Upson, M. D.; Secretary, F. S. Clark, M. D.; Treasurer, F. C. Taylor, M. D.

Lorain County Medical Society.—President, Frank Young, M. D.; Secretary, E. O. Hug, M. D., Lorain.

Lawrence County Medical Society.—President, C. G. Gray, M. D.; Secretary, J. W. Lowry, M. D., Ironton.

Lucas County Medical Society.—President, A. F. McVety, M. D.; Secretary, G. F. Suker, M. D., Toledo.

Ashtabula, Lake, and Geauga Medical Society.—President, J. A. Dickson, M. D.; Secretary, H. E. Whitsey, M. D., Ashtabula.

DELINQUENTS.

Hildreth District Medical Society.
Clermont County Medical Society.

Fayette County Medical Society.
Wayne County Medical Society.
Stillwater Medical Society.

DECEASED MEMBERS.

Jonathan Morris, M. D., Ironton.
C. G. Comegys, M. D., Cincinnati.
Joseph Price, M. D., Randolph.
J. P. Cowan, M. D., Ashland.
T. J. Barton, M. D., Zanesville.
H. C. Beard, M. D., Lucasville.
T. M. Cook, M. D., Sandusky.
Wm. J. Scott, M. D., Cleveland.
W. S. Battles, M. D., Shreve.
Ferdinand H. Kramer, M. D., Cincinnati.

To the following were issued delegate certificates to the American Medical Association: T. J. Barton, M. D., Zanesville; W. C. Weber, M. D., Cleveland; J. E. Woodbridge, M. D., Cleveland; N. R. Coleman, M. D., Columbus; R. Harvey Reed, M. D., Columbus; W. A. Dixon, M. D., Ripley; J. F. Baldwin, M. D., Columbus; C. A. Haman, M. D., Cleveland; D. C. Wilson, M. D., Ironton; X. C. Scott, M. D., Cleveland.

THOMAS HUBBARD, *Secretary.*

Dr. X. C. Scott, Cleveland, moved to receive, and that the financial part be referred to the Financial Committee. Seconded and carried.

James E. Pilcher, M. D., Captain Medical Department United States Army, Columbus: "Some Features of Military Medicine and Surgery at the Present Day." (Read.)

H. B. Gibbon, M. D., Tiffin: "Rational Medicine." (Read.)

Committee on Admission and Medical Societies: Dr. A. F. House, Dr. A. R. Baker, Dr. C. D. Noble and Dr. W. C. Chapman, present. Dr. S. C. Ayres, of Cincinnati, named in the place of Dr. A. B. Richardson, absent.

A list of the societies wishing to become auxiliary was read by the Secretary:

Cleveland Medical Society.
Lorain County Medical Society.
Lawrence County Medical Society.
Lucas County Medical Society.
Ashtabula, Lake, and Geauga Medical Society.
Brunson Medical Society.
Perry County Medical Society.

Dr. X. C. Scott, Cleveland: I wish to enter a protest here, publicly, against the Cleveland Medical Society becoming auxiliary to this Society, from the fact it is suspended by the American Medical Association and ordered to appear before the Judicial Council at Philadelphia next year.

The Chair decided the applications would go to the Committee on Admission and Medical Societies without motion.

Dr. X. C. Scott, Cleveland: I would like to enter a protest against the gentlemen on the committee acting on the Cleveland Medical Society, because three members of the committee are members of the Cleveland Medical Society. I would move that it be referred to a special committee.

The motion was seconded by Dr. Eli Conn, and discussed by Dr. W. H. Humiston, Dr. H. S. Straight, Dr. W. E. Wirt and Dr. X. C. Scott, of Cleveland, and Dr. J. A. Dickson, of Ashtabula.

Dr. X. C. Scott, Cleveland, asked the Secretary to read this order.

The Secretary read as follows:

ATLANTA, GEORGIA, May 7, 1896.

In the matter of the Cleveland Medical Society, this case having been referred back to the Association by the Ohio State Medical Society at its annual meeting, May 11, 1895, the Judicial Council report that the applications for membership of those persons belonging to said Cleveland Medical Society are still suspended, whether coming as members from said Cleveland Medical Society or any other medical society, and your Council has instructed its Secretary to notify said Cleveland Medical Society to appear before said Council to answer the charges which have been preferred against its members, at the next annual meeting of the Association. Respectfully yours,

H. D. DIDAMA, X. C. SCOTT,
Chairman Judicial Council. *Secretary Judicial Council.*

Discussion was continued by Dr. J. E. Cook, of Cleveland, and Dr. J. A. Thompson, of Cincinnati.

Question: That matters pertaining to the Cleveland Medical Society be taken out of the hands of the standing committee and put in the hands of a special committee. Lost.

Thomas W. Jackson, M. D., Akron: "Extensive Skull Fracture with Unusual Symptoms. Operation. Recovery." (Read.) Discussion: Dr. D. N. Kinsman, Columbus.

Wm. Thomas Corlett, M. D., Cleveland: "Modern Status of Specific Urethritis, with its Treatment." (Read.)

F. F. Lawrence, M. D., Columbus: "Salpingitis." Discussion by Dr. W. H. Humiston, Cleveland, Dr. C. N. Smith, Toledo, Dr. F. W. Entrekin, Findlay, and closed by Dr. Lawrence.

Geo. W. Crile, M. D., Cleveland: "Research into the Technique of Laryngeal Operations, with report of four successful total extirpations."

Discussion by Dr. J. A. Thompson, Cincinnati, Dr. H. S. Straight, Cleveland, and closed by Dr. Crile.

Dr. R. Harvey Reed moved that Col. Waters and Capt. J. E. Pilcher be invited to sit with us, and have the privilege of the floor. Seconded and carried.

Dr. James E. Pilcher: I appreciate profoundly the honor conferred upon me by my admission to the privileges of this Society, and I could wish that my first appearance might be in another way than in calling attention to the fallibility of human reason and in moving resolutions in opposition to human error. But the movement of the self-styled anti-vivisectionists—very excellent gentlemen no doubt in private life—has gathered so much momentum in its misdirected career of exaggeration and misrepresentation that the medical profession must in self-defense take a decided stand for the preservation of its own liberties and the best interests of suffering humanity. It is one of the unfortunate concomitants of all progress that certain of its advocates should proceed to unjustifiable extremes. Extremists are well enough in their way, and exaggeration is sometimes of advantage in attracting attention to a subject which might otherwise escape well-merited consideration. But when the extremist begins an effort to prohibit that which is essential to the progress of civilization and the highest phases of philanthropy, it is time to call a halt.

There is no profession in which humanity is so much a part of the daily life of its practitioners as medicine, no class of mankind so conspicuous for gentleness, tenderness and charity as medical men, no body of individuals of whom it could be so truly said that they would inflict pain upon no living being, as the practitioners of the healing art. The absurdity of placing such persons in the attitude of defense against an accusation of cruelty or inhumanity of any kind is evident to every one.

It has been admitted from the beginning of history that the lower animals are designed to subserve the interests of mankind. The most rabid anti-vivisectionist will masticate his cutlet of veal or his shoulder of lamb all regardless of the joyous young life that has been rudely terminated, merely to gratify the animal appetite of the alleged defender of our dumb animals. We have no record of any refusal of the *quasi* humanitarians to partake of the viands which are displayed in the butcher's shop for the gratification of the gourmand; we have no record of any attempt, legislative or otherwise, to close the establishments of the dealers in animal flesh. The sportsman inflicts untold agony upon the victims of his prowess, but we hear of no movement looking to the prohibition of hunting; on the contrary, most of our States by legal enactment designate certain seasons in which the chase is expressly allowed, the prohibition of the sport in other parts of the year being due not to a desire to save the game from suffering but rather to provide for the more prolific reproduction of the species, so that a greater number of victims may be available for the disciples of Nimrod during the following season. The anti-vivisectionist nestles luxuriously in his furs, and his wife waxes gorgeous in her head-gear garnished with the plunder of feathered songsters, both the spoil of the rapacity and the cruelty of man, while the shoe trade, based entirely

upon the products of the death of millions of God's most harmless of creatures, is prosperous in the extreme.

The horse which he drives, the capon with which he delights his palate, and the beef or mutton which forms his daily food, are all distorted examples of their species, deformed and degraded by painful operations in order to adapt them better to his service, but where is the record of his refusal to use them?

When the anti-vivisectionist becomes a strict vegetarian, when he avoids all amusements or foods resulting from animal slavery or suffering, when he clothes himself entirely in garments of vegetable and mineral composition, when he suppresses all practices, sportive and mercenary, by which pain is inflicted upon animals, he may properly begin to inquire into vivisection with a view to ascertaining whether it is humanitarian or cruel. I say, he may *begin* to inquire, for if he is honest and unprejudiced, he will go no farther than the beginning, since he will immediately discover that of all practices, altruistic and humane in the highest sense of the word, vivisection is one of the most notable.

In the War of the Rebellion, 3,273 out of 3,717 cases of wounds of the intestines were fatal. It was demonstrated a few years ago by experiments on dogs that abdominal section and intestinal suture in such cases was a feasible and successful operation, and the operative procedure was experimentally elaborated, so that by it the mortality in gunshot wounds of the intestines has been reduced from ninety down to ten per cent. In other words, if these vivisectional experiments had been performed before the war, over three thousand men might have been saved to the country with injuries not sufficient even to require a pension.

The brain, which, as well as the abdomen, was formerly regarded as forbidden ground to the surgeon, has been by the vivisection experiments of Ferrier and

others, brought within the realm of curative art. In a single year, out of a hundred and sixty-five cases of epilepsy collected by Echeverria, seventy-five were successfully cured, and in the same period Macewen of Glasgow saved no less than ninety human lives by following out the cerebral indications discovered by Ferrier in his experiments upon living lower animals.

To relate fully and adequately the contributions of vivisection to the means of succoring the sick, relieving the suffering and rescuing the perishing will fill up the entire time of this meeting for many sessions. The work of Aristotle, Realdus Columbus, Andreas Carsalpinus, William Harvey and Marcello Malpighi in discovering the circulation of the blood—a matter not only of medical but of general history as well—was entirely conducted by experiments upon lower animals. The experiments of Vesalius, Hooke and Lower gave us artificial respiration, to which we owe so many thousands of lives every year. Transfusion of blood was directly the offspring of vivisectional experiment. The relief of large numbers of kidney affections was demonstrated only a few years ago through animal experiments by Simon at Heidelberg. Indeed, the entire system of antiseptic and aseptic surgery, the greatest humanitarian triumph in the world's history, is based upon the practice of vivisection. Medicine owes as much to it as surgery, for the bacillus of anthrax, the bacterium of tubercle, the micro-organism of diphtheria, the spirillum of relapsing fever, the streptococcus of erysipelas and puerperal fever, and many other specific agents in disease, have been discovered entirely through experiments upon lower animals. The antitoxin cure of diphtheria, the Pasteur inoculation cure of hydrophobia, the prevention of smallpox by vaccination, and many others of the most important therapeutic agents of modern medicine, are due to vivisection, while still many

more are the subjects of observations which beyond doubt will ultimately result in the discovery of curative procedures.

Said an eminent oculist, now dead: "I have spoiled a bushel of eyes in learning to treat one." Said a celebrated English surgeon, not long ago: "Doctor, you have a more sensible method in America, in learning intestinal surgery on dogs: we are not generally allowed to vivisect here, and I have filled graveyards full of people in learning intestinal surgery on humans." The unspeakable advantage to be gained by the practice of operative procedures upon the lower animals in order to gain the experience and dexterity which will render more successful operative work upon human beings cannot be estimated. The perfection of technique, the observation of the conduct of wounds, familiarity with topography and the acquirement of the *tactus eruditus* in handling the organs and parts, must be gained by actual practice, and the death of a thousand rabbits is but a small price to pay for the privilege of saving a single human life.

Moreover, while vivisection experiments are always beneficial, they are never cruel. Even were the medical student the heartless creature represented by the anti-vivisectionists, he would *prefer* to silence the cries and subdue the struggles of his subject by an anesthetic, and, as a matter of fact, a desire to avoid the infliction of suffering causes him to render the little animal contributor to the welfare of mankind entirely insensible during his work.

All this emphasizes the deceptive and incorrect character of the efforts to embarrass if not prohibit the future of these genuinely philanthropic as well as scientific studies. A dangerous movement looking to this end, initiated in the District of Columbia, has met with astounding success, and it behooves all true lovers of

scientific progress to unite in an attempt to prevent the enactment of the bill now before the United States Senate for this purpose. For should this movement be successful in the District, it would not only put an end to most important work in various scientific departments of the Government and in the medical schools of Washington, but it would be the beginning of a movement jeopardizing scientific study throughout the entire Union.

In view of these facts, Mr. President, I beg to move the adoption of the following resolutions, adopted by the American Medical Association, May 6th, 1896:

WHEREAS, The members of the American Medical Association recognize the fact that the development of scientific medicine has resulted largely from experiments upon the lower animals; and

WHEREAS, Anesthetics are habitually administered to animals subjected to painful experiments; and

WHEREAS, Restrictive legislation is in our opinion unnecessary and opposed to the continued progress of medical science; and

WHEREAS, It is an unjust reflection upon the humanity of those engaged in animal experimentation to enact laws requiring them to use anesthetics and appointing inspectors to see that they do so; and

WHEREAS, Far more unnecessary pain is constantly being inflicted upon the lower animals for sport and gain than in biological and pathological laboratories; and

WHEREAS, No evidence has been presented by those who advocate restrictive legislation, showing that abuses exist in the District of Columbia; and

WHEREAS, Results of great practical importance have been obtained by experiments on the lower animals made in the Government laboratories in the District of Columbia:

Therefore, Be it Resolved, That the American Medical Association earnestly protests against the passage of Senate Bill No. 1552, entitled "A Bill for the further prevention of cruelty to animals in the District of Columbia," or any modification of this bill, unless it shall first be shown by an impartial investigation that cruel and unnecessary experiments are being performed in the District of Columbia, and that existing laws do not provide suitable punishment for cruelty to the domestic animals.

Resolved, That the Ohio State Medical Society earnestly joins in the protest of the American Medical Association as expressed in the foregoing resolution adopted at the recent meeting of that representative body of American physicians and surgeons, held in the city of Atlanta.

Resolved, That a copy of these resolutions be sent to the Senators and Representatives of the State of Ohio in the Congress of the United States, and that they are hereby requested to use their influence in opposition to the proposed legislation "unless it shall first be shown by an impartial investigation that cruel and unnecessary experiments are being performed in the District of Columbia, and that existing laws do not provide suitable punishment for cruelty to the domestic animals."

Dr. R. Harvey Reed: I wish to move the adoption of these resolutions and ask that the preamble made by Capt. Pilcher and the resolutions be spread on the minutes of this Society. Seconded.

Dr. L. B. Tuckerman, Cleveland: Mr. Chairman, I was in Washington recently and I found they had everything pretty nearly fixed to shut up the work of the Government laboratories in the matter of antitoxin and in the matter of the investigation of diseases of animals in the laboratories connected with the Agricultural De-

partment. The purpose of this is to put us where they are in England. In England when a man gets to a certain point in physiological research, he has to go to a German laboratory because he cannot make the investigation in England without subjecting himself to fine and imprisonment. This is that sort of humanitarianism of which it has been very bitterly observed, "We like to have our neighbors practice the virtues." But I wish to say any resolution this Society may pass, any action this Society will take, will amount to the same as water on the duck's back unless this Society appropriates money from its treasury and sends some man to Washington on behalf of this Society to interview every man, Senator and Representative, from the State of Ohio.

Therefore I offer the following amendment:

Resolved, That the Society also endorse and urge upon Congress the passage of H. R. 8777 to provide for examination of immigrants at ports of debarkation, and that $100.00 be appropriated to send an accredited delegate from this Society to appear before the appropriate committees of Congress, in behalf of these resolutions, early in the December session.

Amendment seconded by Dr. Reed. Carried.

Dr. J. A. Duncan, Treasurer: There is not enough money in the treasury at the present time to pay the debts of the Society.

Question on the passage of the amended resolution. Carried.

The Chair read the names of Dr. Wegg, Jamaica; Dr. Sommers, St. Louis; Dr. Herdman, Ann Arbor; and Dr. Douglas, Detroit, as visitors.

Dr. Reed: I move that to these gentlemen be extended the courtesies of this Society and the privileges of the floor. The motion was seconded and carried.

The following were appointed members of the Committee on Finance: Dr. H. J. Herrick, Dr. Chas. A.

Slocum, Dr. C. M. Taylor, Dr. W. C. Phillips, and Dr. C. F. Clark.

Dr. X. C. Scott, Cleveland, moved to adjourn. Seconded. Lost.

REPORT OF COMMITTEE ON ADMISSION.

The Committee on Admission reported favorably on the application of:

The Cleveland Medical Society.
The Lorain County Medical Society.
The Lawrence County Medical Society.
The Lucas County Medical Society.

Unfavorably on the applications of:

The Brunson Medical Society.
The Perry County Medical Society.

Signed, A. F. HOUSE, *Chairman.*
W. C. CHAPMAN.
C. D. NOBLE.
A. R. BAKER.
S. C. AYRES.

Dr. Cook, Cleveland, moved the report be adopted. Seconded.

Dr. X. C. Scott, Cleveland: I propose to give you a history, gentlemen, of the Cleveland Medical Society, so you will understand its doings in the past. I was one of the gentlemen who first started the Cleveland Medical Society. It organized under the regular Code of Ethics. Afterward they changed the constitution. Some six or eight months afterward I introduced a resolution in the Society, that they should put themselves in accordance with the code of the American Medical Association. The night that came up I was out of the city and it was laid on the table by unanimous vote. Afterward I introduced a resolution that every legal practitioner of that city or anywhere else could be an active

member of that society. Every man voted for it, except myself, and I resigned from the Society. This matter was carried to the American Medical Association at the Baltimore meeting, and it came up again last year. The charges against the Society were these: That their constitution was not in accordance with the American Medical Association and the Code of Ethics.

Dr. G. A. Collamore: My point of order is this: The discussion should be confined to the report of the committee. However interesting it may be to the members of the Cleveland or other medical societies, this is not the place to wash their dirty linen. The Society is not now concerned as to what this Cleveland Medical Society has been in the past, but we want to know only what they are now. The Committee on Admission say that *now* they are all right. That is the question to be discussed.

Dr. W. C. Chapman: I was chairman of the Committee on Admission last year. Their report, which was adopted by this Society, was: That if the Cleveland Medical Society eliminated a certain part of their constitution, they could come into the Society. They have eliminated that.

Dr. Scott: I want to show why these people should not be members of this organization. The Cleveland Medical Society was suspended a year ago from the American Medical Association.

The members are cited to appear next year before the American Medical Association. And I desire to call attention to this: If we allow these men to come in, we will place ourselves in the same position as did the New York State Medical Society, which has been trying for years to get back. So I move, Mr. Chairman, the report of the committee be adopted, save that part referring to the Cleveland Medical Society. (Not seconded.)

Dr. J. E. Cook, Cleveland : I desire to be heard on the original motion, on the adoption of the committee's report. Dr. Scott's own admission of the action he took while a member of the Cleveland Medical Society, ought to be sufficient to condemn the move he is making. He admits that he moved the adoption of a resolution which was designed to put our society in disrepute. And then he resigned! It is a simple proposition. It does not seem to me there is any occasion for bombast or temper. Simply, some 385 members in the northern part of the State, in the Cleveland Medical Society, having conformed in spirit and letter to the rulings of the Ohio State Medical Society, ask to be made an auxiliary body.

We are not, as a Society, connected in any way with the American Medical Association. What right has the American Medical Association to place any restrictions against our Society? They have absolutely no jurisdiction.

Dr. Scott, unfortunately for our Society, for two years was a member in good standing. During that time he had personal knowledge of the irregularities, as he calls them, of which he speaks here to-day, and yet as a member he never uttered a protest and never preferred any charges. Was it not his duty to prefer charges then, and not wait until after he had resigned?

Dr. Scott (point of order) : Neither I nor any member from the Cleveland Medical Society have any right to vote upon this subject, because we are personally interested in it.

The President, being asked to rule that neither Dr. X. C. Scott nor other interested members from Cleveland should vote upon the motion to adopt the report of the Committee on Admission and Medical Societies, declined to make such ruling, stating that it was beyond his power to say what members should or should

not vote, and stating further that he must accept the roll of members as he found it.

Previous question called for. Carried.

Question on adoption of report of Committee on Admission and Medical Societies carried with one dissenting voice.

Dr. Humiston moved a reconsideration. Seconded by Dr. Cook. Lost.

Resolved, That the Secretary of the Ohio State Medical Society be instructed to notify the officers of the American Medical Association of the action of this Society in reference to the Cleveland Medical Society. Carried.

Adjourned.

In the evening the Society attended a lecture by Prof. Benj. A. Thomas, of the Ohio State University. A practical demonstration of the Roentgen ray apparatus and illustrations by lantern slides were presented in a most instructive manner. The practicability of the fluoroscope as an aid to surgical diagnosis was demonstrated, and an attempt was made to locate a fragment of glass imbedded many years ago in the foot of one of the ladies present. A radiograph was taken on the day following.

Thursday Morning Session.

President Dan Millikin in the chair.

The Secretary read the minutes of the last meeting. There being no objection to the minutes as read, they were approved.

Dr. Tuckerman: If it be in order, I would move the Secretary be empowered, as usual, to employ a stenographer. Seconded and carried.

The Treasurer's report was read.

TREASURER'S REPORT.

TOLEDO, O., May 26, 1896.

GENERAL STATEMENT.

1893—Receipts	$2,074 19	
Expenditures		$2,074 19
1894—Receipts	1,596 95	
Expenditures		1,596 95
1895—Receipts	1,868 00	
Expenditures		1,788 09
Cash balance on hand		79 91
Grand total	$5,539 14	$5,539 14

RECEIPTS, 1895.

Initiation fees	$ 294 00	
Dues, membership	1,574 00	

EXPENDITURES, 1895.

Dr. Thomas Hubbard:		
Salary, Secretary	$125 00	
Salary, Editor	100 00	
Bills approved, Ex. Com	69 66	
Incidentals	2 50	
Printing and stationery	68 75	
Sundries	22 53	
Postage	25 00	
		413 44
Dr. James A. Duncan:		
Salary, Treasurer	125 00	
Advances refunded	3 79	
Printing and stationery	20 31	
Postage	51 58	
Exchange, bank collections, dues	8 77	
		209 45
Refunded, guarantee fund		125 00
State Medical Legislation, Ex. Committee		104 80
Publication Transactions, 1895		735 52
Express charges		99 88
Central Traffic Association		22 00
Edison Electric Light Co		3 00
J. J. Noland		25 00
Stenographic report Convention,		50 00
Cash balance on hand		79 91
	$1,868 00	$1,868 09

There is an unpaid account in favor of Hon. J. K. Richards, of Columbus, O., amount $200, for services rendered in behalf of the Legislative Committee.

Arrearages in membership dues to date, $298.00.

JAMES A. DUNCAN,
Treasurer.

Referred to the Finance Committee.

A letter was read by the Secretary from the Michigan Medical Society, with reference to a plan of organization of the medical profession of the United States. On motion by Dr. Collamore, it was referred to the Committee on Legislation.

The following Committee on Nominations was appointed by the President: Dr. D. N. Kinsman, Dr. G. A. Collamore, Dr. S. Loving, Dr. W. J. Conklin, and Dr. A. R. Baker.

A communication was read by the Secretary from the Medical Society of the State of New York, asking that a delegation of three members be appointed to meet similar delegates from other State medical societies at Washington. The object of the meeting is to organize a permanent body to consider medical matters of national importance.

Dr. Collamore moved to refer to the Committee on Legislation. Seconded and carried.

Dr. L. B. Tuckerman, Cleveland: "Is it Grippe, or What?"

Dr. S. S. Haldeman, Portsmouth: "Antitoxin in the Treatment of Diphtheria." Discussion by Dr. Klein, Portsmouth, Dr. E. F. Wilson, Columbus, Dr Thomas Hubbard, Toledo, and closed by Dr. Haldeman.

The Committee on Publication being called and three of the members absent, the Chair filled the committee by appointing the following members: Dr. C. N. Smith,

Dr. Jacobs, Dr. John P. Sawyer, Dr. J. C. Oliver, and Dr. John A. Thompson.

Two members of the Committee on Legislation being absent, the following were appointed in their stead: Dr. L. B. Tuckerman, Cleveland, Dr. F. D. Bain, Canton. Present: Dr. C. E. Beardsley, Dr. J. A. Collamore, Dr. J. F. Baldwin.

Dr. J. E. Fackler, Versailles: "The Treatment of Diphtheria." Discussion by Dr. J. C. Reeve, Dr. J. A. Dickson, Ashtabula, and closed by Dr. Fackler.

Dr. R. E. Skeel, Cleveland: "The Etiology and Prophylaxis of Puerperal Sepsis." Discussion by Dr. Wilson, Columbus, and closed by Dr. Skeel.

Dr. M. Stamm, Fremont: "Intestinal Obstruction—Some Diagnostic Points and Treatment." Discussion by Dr. Reed, Middleport, Dr. O. W. Ward, Duncan Falls, Dr. H. J. Herrick, Cleveland, Dr. M. Rosenwasser, Cleveland, Dr. F. W. Entrekin, Findlay, and closed by Dr. Stamm.

Dr. W. J. Gillette, Toledo: "Perforating Ulcer of the Stomach." (Specimens presented.)

Dr. C. R. Holmes, Cincinnati: "The Accessory Cavities and their Relation to the Eye. Report of cases and presentation of specimens." Discussion by Dr. Max. Thorner, Cincinnati.

Adjourned.

Thursday Afternoon Session.

Only two members of the Committee on Ethics, Dr. S. S. Thorn and Dr. F. C. Larimore, being present, the committee was filled by the addition of Dr. S. B. Hiner, Lima; Dr. A. Rhu, Marion; and Dr. E. H. Hyatt, Delaware.

Charges against Dr. Wm. J. Taylor, East Liverpool, and Dr. J. W. Collins, formerly of Steubenville, referred to the committee without a motion.

The Committee on Admission reported, recommending for membership thirty-five applicants. Dr. Kinsman moved the report be received and the candidates recommended elected. Seconded and carried.

Dr. Tuckerman moved the thanks of this Society be extended to Prof. Benj. J. Thomas for his excellent lecture and demonstration of X-rays, last evening, and to Col. Fred. Blankner, Sergeant-at-Arms, for aiding the Committee of Arrangements and Society. Carried.

REPORT OF THE EXECUTIVE COMMITTEE OF THE SPECIAL COMMITTEE ON MEDICAL LEGISLATION.

Dr. J. C. Culbertson, chairman Special Committee State Medical Legislation, rendered an explanatory report, stating why and how the committee was appointed. The report of the committee was then read by Dr. N. R. Coleman, chairman of the Executive Committee.

The Executive Committee, appointed by the Special Committee on State Medical Legislation May 15th, 1895, beg to submit the following report:

The Chairman of the Executive Committee called a meeting of that body on June 11th, 1895, at the Neil House, in Columbus. It was deemed advisable to request the Executive Committees of the Eclectic and Homeopathic schools to meet with us, to consider the most feasible methods of conducting the campaign. All the members of your Executive Committee except one were present; also the Executive Committees of the two schools above mentioned. Dr. A. J. Kimmell, of Findlay, secretary and treasurer of the General Committee, was elected treasurer of the Executive Committee. Dr. Kimmell will submit an independent report.

After canvassing the field most carefully it was agreed that the committee should issue 20,000 copies of the original bill as framed by the convention of all the the schools, held at the Neil House, in Columbus, Dec. 21st, 1893; 10,000 copies of a letter to the medical profession of the State; and 200 copies of a letter of instruction to the members of the General Committee. It was further ordered that the Chairman fill all the vacancies in the General Committee. A committee was appointed to see, either directly or indirectly, all the newspaper editors of the State, and to explain the nature of the bill and give them all the information that they might request. All the newspapers of the city were notified of the meeting of the Executive Committee, and all had representatives present. The work was thoroughly mapped out in detail, a synopsis of which was submitted to you last year, and will be found on page 30 of the Transactions of 1895.

The bill for the regulation of the practice of medicine in the State, and the letters, were ordered printed and sent out at once. By the last of June that work was completed. The General Committee was filled in all the counties and medical societies of the State. The meeting of the committee was most earnest and harmonious; Eclectics and Homeopathics then, as all the way through, entering into the work with zeal and energy, and adjourned subject to the call of the chairman. Everything was arranged and everybody knew their duties, and, with the determination to make it an aggressive one, the campaign was thoroughly opened up. Every convention over the State for the nomination of senators and representatives was watched carefully, having representatives of the committee and other members of the profession present at each and every convention. There was much good work accomplished by this method, evidently preventing those or some of

those who were not in sympathy with our work from receiving nominations, and modifying the views of others who had not given the matter careful attention. Before the election there was a third letter sent to all the members of the General Committee, and to a large number of physicians all over the State, requesting them to call upon the nominees and use their influence in having elected those who were favorable to the legislation in question. After the election there was another letter sent to members of the General Committee requesting them to call upon the members elect of the general assembly, and, if possible, have them promise to aid in the passage of the bill. This was the most effective work that was made during the campaign. It brought the members of the general assembly and members of the profession for the first time face to face to consider the question definitely. This letter was sent out on the 15th of November with a request that a report be sent to the chairman of the Executive Committee from each member of the General Committee, stating whether the representatives or senators in their respective county were pledged, either in writing or verbally, as favorable or opposed to the bill.

By the 15th of December, the time specified for the reports to be in, the Chairman had received reports from 85 per cent. of all the counties in the State, showing 80 per cent. of senators and representatives favorable to the measure. On the 16th day of December, another letter was sent to members of the General Committee in delinquent counties, requesting a report to be rendered at once. By the 25th of December we had reports showing that 90 per cent. of the members of the general assembly elect were favorable to the bill. At this time, your committee were confident that the bill would become a law. This fact, for obvious reasons, was not made known but to three members of the profession,

lest they might think their work finished and relinquish their efforts and thereby cause defeat. Letters were immediately sent out all over the State, earnestly urging each and every member of the profession who was a friend to the measure, to renew his efforts, and upon every opportunity to continue his work with the various members. This, I believe, was done very faithfully and very successfully by the profession, and the members of the general assembly were then turned over to the tender mercies of those of us who eagerly awaited their arrival, to receive them with open arms and many requests. This work was immediately taken up by those who were in Columbus, and an active part was taken in the organization of the House and Senate. We then realized that we had many friends already convinced that such a law was right, just, and a necessity.

Daily visits were made by the chairman of the Executive Committee to the House of Representatives and Senate, and every opportunity was improved to obtain an expression from the various members and to determine the best time to introduce the bill. Your committee realized that there were many defects in the bill, and if passed in the form in which it was placed in their hands, it would be inoperative. First, it was found that when the funds were placed in the State treasury, that they could not be obtained by the Board without a special act of the general assembly. Second, there was in effect no executive officer in the Board, which condition would have rendered the law valueless. Third, the law as it read was to take effect on and after its passage: an impossibility, as the physicians were required to register and to carry out the other requirements of the law, which required considerable time. Therefore, it was so revised that the law should not take effect for ninety days after its passage. There were many minor defects in some parts of the bill which were implied and

not clearly expressed. Deeming it their duty, as the matter had been placed in their hands and they had been empowered by the Ohio State Medical Society to take charge of and obtain the passage of said bill, the committee engaged ex-Attorney-General J. K. Richards to revise the bill and explain the same to the members of the House and Senate and before the committees of those bodies. He spent about seven days in so doing, and examined every single line and word of the bill. He also examined all the existing laws relative to the regulation of the practice of medicine in other States, and the decisions by the various courts on the same. In short, he made a most careful examination and revision of the whole subject. He was very efficient in his work in the House and the Senate, being ready and willing at all times to give advice to your committee and to explain parts of the law when requested. For such services your committee agreed to pay him $200.

After careful consideration and many consultations, your chairman was convinced that it was best to have the bill introduced in the House, and to place it in the hands of Dr. J. A. Kimmell, Representative from Hancock County. At this time, I am proud to say, the physicians who were members of the House faithfully agreed that they would support the measure, and they proved to be true, earnest, efficient, and faithful workers at all times and under all circumstances.

The bill was introduced in the House January 16th, read the second time and referred to the Committee on Medical Colleges and Societies. The bill was considered by the committee January 23d, and referred back to the House without a single change in any particular. It was placed upon a third reading and passage on January 29th, 1896, and was passed by a vote of seventy-four yeas and one nay, as the official record shows. The bill was strongly supported in the House, having

but a small amount of opposition. The members of the profession connected with that body supported th e bill most earnestly and eloquently. It was then introduced in the Senate by Senator Fleishmann, of Hamilton Co., January 30th, read the second time, and referred to the Senate Committee on Medical Colleges and Societies. The Senate Committee considered the bill February 14th, at which time there was a very large concourse of physicians from all parts of the State, of all schools and denominations, some of which are known to but few physicians. The Senate Committee was very indulgent, kind, yet efficient, not fearing to propound any and all questions that were calculated to give them the required light. This was one of the most enthusiastic and satisfactory meetings, so far as your committee was concerned, that they had had thus far during the campaign. A large number of the most prominent physicians of the State were present, many of them being men who have toiled in the profession for many years. The members of the Physio-Medical school were present, and desired a representative on the Board provided the bill passed. They were informed that that would rest with the governor, and we had all confidence in his fairness and integrity, and believed that they had no reasons to fear anything; yet they insisted that the committees of the other schools make them some promise that they would not oppose them having a member of their school on the Board, provided the bill passed. After careful consideration it was agreed that the following be submitted in writing in order to assure them that we had no intention of any interference in the matter:

"We, the undersigned, agree to favor the appointment of a representative of the Physio-Medical school on the State Board of Medical Registration and Examination provided for in the Kimmell bill."

Signed by the various members of the Executive Committee of the Regular, Eclectic and Homeopathic Schools.

The bill was reported back in the Senate without the change of a single word or letter, and read the third time and placed upon its passage, February 19, 1896, and passed that body by a vote of thirty-five yeas and no nays. One Senator was absent on account of the death of a relative, and one not voting. There were no physicians who were members of the Senate, yet the bill was supported in the most able and determined way by a number of members of that body, the opposition making but feeble efforts. All the work that had been mapped out by your Executive Committee was followed in every detail from the beginning to the end of the campaign. The records will show that very few new bills as large as the one in question have ever passed both houses with such a remarkable record—not a single amendment, not a single change in word or letter, and receiving in the Senate a most remarkable vote, viz., thirty-five out of a possible thirty-seven.

We should be pleased to make personal mention of the very efficient and valuable services rendered by each and every member of the House and Senate, but time will not permit, and we cannot weary you longer. It is just that we should make a faithful report, and in so doing it becomes necessary to say that the treatment received at the hands of the senators and representatives (with a slight exception) at all times and under all circumstances was of the most courteous and dignified character. We are proud to say that every promise made to the committee by members of the House of Representatives and Senate was faithfully kept, and not one cent was expended illegally or otherwise in either body. Your committee determined that if the bill could not be passed by honorable and legal

methods it must fail. Such determination was very easily kept, as there were no indications, at any time or under any circumstances, to give rise to any such violation of said determination. The committee feel justly proud of the kind and generous treatment received at the hands of the press all over the State. As agreed at our first meeting of the committee, that all newspapers of the State should be seen either directly or indirectly, was faithfully carried out, and we now wish to inform you that every promise made by newspaper editors and reporters has been faithfully kept without a single exception. We had the support of a number of leading papers of the State, furnishing without compensation most valuable and telling editorials. Some deemed it best not to definitely take either side, but all those that promised us so to do, kept their promise faithfully. There were a few papers in the State that opposed the measure—that would naturally be expected.

The Executive Committee wishes to extend its thanks to the members of the General Committee for the efficient services rendered during the campaign. There was much work required of them in the way of obtaining petitions and visiting the members elect of the general assembly. This work demanded considerable expenditure of time, for which we trust such members may receive true recognition in due time. There were some members of the General Committee who did not give this matter the attention that, in the opinion of your committee, it deserved, but in many such cases there were doubtless peculiar circumstances or conditions which prevented. Union County was the first to send in their report relative to the senators and representatives of that county, and was the only county that sent in a petition having on it the name of every physician in said county. This being the only opportunity presented since the passage of the bill, to express our sin-

cere and earnest thanks to all those who have given us such good and efficient service, we wish particularly to extend thanks to the press of the State and the medical journals that rendered such valuable aid, being ready and ever willing to do all within their power to assist in the passage of the bill, for we recognize that the secular press and medical journals have been strong factors in bringing about the passage of this bill. We wish, in conclusion, to extend our thanks to the members of the general assembly who have treated us so kindly, honorably, and justly; and our earnest prayer is that in their hour of affliction they may have good and earnest medical attention, and may they be returned many times to the positions which they have filled so honorably to themselves and to those they represent.

Respectfully submitted.

N. R. COLEMAN, Chairman,
N. P. DANDRIDGE, Sect'y,
WILLIAM E. WIRT,
Executive Committee.

On motion the report was received and directed to be spread upon the minutes in the annual Transactions.

By Dr. D. N. Kinsman, Columbus:

Resolved, That the Ohio State Medical Society recognizes with the highest sense of appreciation the successful labors of the Executive Committee of the Committee on Medical Legislation: Drs. N. R. Coleman, N. P. Dandridge, W. E. Wirt, S. S. Halderman, M. H. Brown.

Resolved, That in their sacrifice of personal interests for the good of the whole people of the State, in their untiring and unselfish efforts in the face of abuse and misrepresentation, we recognize those qualities which are characteristic of the highest type of manhood in our profession.

Resolved, That the profession and its representative organization, the Ohio State Society, owes these men a debt of gratitude which it can recognize but never pay.

Resolved, That a copy of these resolutions be spread upon the minutes of the Society, and that copies suitably engrossed and signed by the President and Secretary be sent to the members of the Executive Committee.

Adopted.

Dr. J. C. Culbertson, Cincinnati: In the reading of Dr. Coleman's report you observe it was necessary for him to pay an expense account of $200.00 for the expenses of the attorney. This, Dr. Coleman advanced out of his own purse. Therefore, I move he be reimbursed by this Society to that amount. Seconded and carried.

Dr. Conn: Last year this committee asked for an appropriation from the State Society of $300.00. That was agreed to without opposition, and before it was put there was an amendment to make it $500.00, and it was so voted and carried.

Dr. Culbertson: I would say it should come out of that appropriation of $500.00. One or two bills amounting to about $100.00 have been paid out of the appropriation.

REPORT OF COMMITTEE ON FINANCE.

The Finance Committee hereby report that they have made detailed examination of Treasurer's report and vouchers and find the same to agree. They therefore take pleasure in approving the report.

An account was presented to the committee by J. J. Noland, for services rendered for assisting Treasurer, amounting to $25, which the committee recommend to be paid.

The committee also desire to express their pleasure at the careful, neat and correct manner in which the

books have been kept. They also recommend the assessment of $2.00 on each member for the expenses of the ensuing year.

H. J. HERRICK,
C. E. SLOCUM,
W. S. PHILIPS,
Finance Committee.

It was moved to receive and adopt. The motion was seconded and carried.

Dr. John A. Thompson, Cincinnati: While this matter of medical legislation is being considered, I have a resolution to offer along the same line. The battle is not over. If we wish to preserve this law in its integrity and without injurious amendments, we must maintain the State organization to fight for the bill and such amendments as may be deemed necessary. The Dental Society will furnish us a good object-lesson. After they had secured an efficient law regulating the practice of dentistry in the State of Ohio, they found it necessary to keep a standing committee to prevent injurious amendments. In order that we may be equipped with a good fighting organization, and may help the State Board in the enforcement of the law, I wish to submit this resolution:

Resolved, That the President be requested to appoint a chairman of a special committee on legislation. Said chairman shall correspond with the officers of local medical societies and secure the appointment of one member of this special committee in every county in the State. The object of this committee shall be to assist the State Board of Medical Examination and Registration in the enforcement of the law regulating the practice of medicine in the State of Ohio; to prevent the passage of amendments weakening the law; to

secure the enactment of such amendments as experience shall demonstrate to be necessary in securing the highest legal standard for the practice of medicine in the State of Ohio.

Dr. Reed : I take pleasure in seconding the resolution. Carried unanimously.

A communication from the Standing Committee on Legislation was read by the Secretary :

REPORT OF STANDING COMMITTEE ON LEGISLATION.

C. E. Beardsley, G. A. Collamore, L. B. Tuckerman and F. D. Bain, present. C. E. Beardsley, Chairman, F. D. Bain, Secretary.

A letter from the President of New York State Medical Society was read, and in accordance with the invitation contained therein we recommend the President of our Society appoint three delegates and three alternates to meet with delegates of other State societies, upon call.

In regard to the communication of the Michigan State Medical Society we ask further time to consider the same, with liberty to report at next annual meeting, the subject matter being too large and of too great gravity for hasty action.

F. D. BAIN, *Secretary.*

Dr. Scott moved to receive and adopt. Seconded and carried.

President's Address : "A Study in Credulity."

Dr. C. A. L. Reed, Cincinnati : I believe I voice the sentiments of this Association when I return to you our sincere thanks for your masterly address ; and I believe, sir, I make a motion which will meet with the unanimous approval of the Society when I move that 2,000 extra reprints of the Address of the President be

placed at the disposal of the Secretary. Seconded and carried unanimously.

The Chair read a letter from Governor Bushnell, regretting his inability to be present on account of enforced absence from the city.

ELECTION OF OFFICERS.

Dr. W. J. Conklin nominated Dr. F. C. Larimore, of Mt. Vernon, for President. Seconded by Dr. A. F. House.

Dr. W. H. Humiston: It gives me great pleasure, as it did one year ago, on behalf of the profession of our part of the State, to second this nomination.

No other nominations were made.

It was moved that the rules be suspended and that the Secretary cast the unanimous vote of the Society for the election of Dr. Larimore as President. Seconded and carried. The Secretary cast the vote as directed.

The Chair: It gives me infinite pleasure, gentlemen, to introduce to you, if an introduction were needed, Dr. F. C. Larimore. (Applause.)

Dr. Larimore accepted the election in a few well-chosen words.

REPORT OF COMMITTEE ON NOMINATIONS.

The Committee on Nominations reported the following list:

Vice-Presidents—M. Stamm, M. D., Fremont, O., C. F. Clarke, M. D., Columbus, O.; Jno. S. Beck, M. D., Dayton, O.; G. W. Crile, M. D., Cleveland, O.

Secretary—Thomas Hubbard, M. D., Toledo, O.; Assistant Secretary—H. M. W. Moore, M. D., Columbus, O.

Treasurer—James A. Duncan, M. D., Toledo, O.

Finance Committee—H. J. Herrick, M. D., Cleveland.

Ethics—Thos. C. Hoover, M. D., Columbus, O.

Publication—F. D. Bain, M. D., Kenton, O.

Legislation—Chas. Graefe, M. D., Sandusky, O.

Medical Societies and Admission—J. A. Thompson, M. D., Cincinnati, O.

On motion the report was adopted and the candidates declared elected.

An invitation from Mississippi Valley Medical Association to attend St. Paul meeting in October, 1896, was read.

REPORT OF COMMITTEE ON PUBLICATION.

Your committee begs leave to report that in view of the promptness and excellence of the appearance of the Transactions for the past two years under the able and efficient editorship of Dr. Hubbard, that we recommend the thanks of the Society be extended to him.

Further, we recommend that his report herewith transmitted be published in the proceedings of the Society.

Further, we recommend the continuance of the contract for publication with the same firm, on the same terms, without advertising for bids, as was done last year.

We recommend the payment by the Society of the items for illustrations.

Inasmuch as Dr. Hubbard has signified his determination not to accept the editorship, we recommend that Dr. C. N. Smith, of Toledo, be elected Editor of the Transactions, and that he be given full power to act in all matters of detail.

We recommend that one hundred dollars be paid the Editor as compensation for the ensuing year.

JOHN P. SAWYER.
M. M. JACOBS.
JNO. A. THOMPSON.
C. N. SMITH.

Dr. R. Harvey Reed: I move the adoption of that report with two exceptions: the item in regard to bids and the item in regard to illustrations. I do not think we should vote to hand these Transactions over to any particular firm, but they should be bid upon. The illustrations can be made for two-thirds of what they cost us last year. Seconded.

In the discussion the

REPORT OF EDITOR OF TRANSACTIONS

was read by Dr. John P. Sawyer.

According to instructions from the Committee on Publication, the contract was awarded to The Blade Printing & Paper Company, May 29, 1895, on the same basis as last year. The following is the form of contract:

"We agree to furnish the Ohio State Medical Society with 900 copies of the Transactions of the 50th annual meeting, at the rate of 77 cents per copy, on the basis of last year's book, containing 500 pages. Should there be more or less than 500 pages, add or deduct 90 cents per page, it being understood that there will not be less than 400 pages in the book when completed. Extra composition work, such as author's changes and corrections, will be charged for at the rate of 50 cents per hour for the time taken in making the same. All other terms and conditions as per the specifications given under form of contract submitted to us.

"THE BLADE PRINTING & PAPER CO."

Work was begun about the middle of June, and the Editor was able to deliver to the Librarian 900 volumes on the first of September. The work of this company was done with exceptional accuracy and promptness. The Transactions have been ready for distribution within ten weeks from the time work was begun, now two successive years. From two years' experience and observation I would respectfully call attention to the fact that early delivery of Transactions is an exceedingly important factor in arousing and maintaining a proper society spirit in the profession. We cannot prevent the publication of articles read before the Society in medical journals except by competing with this class of literature in promptness. A series of early publications of yearly Transactions aid very materially in securing desirable original contributions to our programs.

The total cost of publishing the Transactions of 1895 was $735.52, for an edition of 900 copies of 498 pages each. Deducting the extras not included in contract, $689.40, which is about 76 cents per volume. The edition of 900 volumes is nearly exhausted, and a few members who are late in paying yearly dues may be deprived of copies. Respectfully submitted.

THOMAS HUBBARD, *Editor.*

Dr. R. Harvey Reed (point of order): There is a Committee on Publication to settle this matter, and I cannot see why the gentleman should bring this before a body who know little about printing matters. I simply moved the adoption with the exception of the matter of bids and illustrations, and that it be left to the Committee on Publication to receive bids. Otherwise I am perfectly willing the report be received and adopted.

Question. Carried.

PLACE OF NEXT MEETING.

Dr. Cook, Cleveland : It is my privilege and pleasure, on behalf of the Cleveland Medical Society and the profession in the northern part of the State, as well as the Cleveland Chamber of Commerce with its twelve hundred representative business men, to extend to the State Society a cordial and earnest invitation to meet in our city on the lake in 1897.

Dr. Chapman : I move you we accept the invitation of Cleveland for next year. Seconded.

Dr. S. Loving: If I am in order, Mr. President, I think it is time the Society had a permanent place of meeting. It is time we had a hall of our own. It is time we had a library of our own. I hope Columbus will be selected.

Dr. A. R. Baker: On behalf of the Cuyahoga Medical Society, I wish to add their invitation to come to Cleveland.

Question on going to Cleveland. Carried.

Dr. A. F. House : I would move you, sir, that the Secretary be instructed to telegraph the greetings of the Ohio State Medical Society to the Indiana State Medical Society, in Ft. Wayne.

Seconded. Carried.

TIME OF NEXT MEETING.

Dr. Loving moved to make it the tenth of June.

Dr. Conn moved the time be the second Wednesday in June. Carried.

Dr. B. L. Millikin, Cleveland: "Some Accidents of Cataract Operations." (Read.) Discussed by Dr. C. R. Holmes, Cincinnati.

Hunter Robb., M. D., Cleveland: "On the Causes and Mechanism of Retroflexion and Retroversion of the Uterus." (Read.) Discussed by Dr. H. J. Herrick; Dr. J. F. Fitzsimmons, Bucyrus; Dr. Rufus B. Hall, Cincinnati; Dr. C. R. Reed, Middleport; Dr. H. B. Gibbon, Tiffin; Dr. J. F. Baldwin, Columbus; closed by Dr. Hunter Robb.

The Committee on Admission made a supplementary report recommending six applicants for election to membership.

Dr. R. Harvey Reed moved the adoption of the report and that the parties be elected members of the Society. Carried.

M. Rosenwasser, M. D., Cleveland: "A Plea against the Meddlesome Treatment of Acute Gonorrhea in Women." Discussion: Dr. W. H. Humiston, Cleveland; Dr. M. Rosenwasser.

The President appointed Dr. N. P. Dandridge, Cincinnati, to serve as chairman of the Committee on Legislation recommended by the resolution of Dr. Thompson.

Dr. R. Harvey Reed presented the name of Captain J. E. Pilcher as an honorary member of the Society. The motion was seconded and unanimously carried.

Dr. R. Harvey Reed: We appropriated, yesterday, a certain amount of money to send a delegate to Washington, to represent the society in opposing attempts to restrict vivisection in the District of Columbia, and in the interest of H. R. 8777, as defined in the resolution of Dr. Tuckerman. The Chair should appoint or select a committee to appoint, or the Society as a whole select, the member to go.

The President: It would please the Chair if the Society would take the matter in hand.

Dr. R. Harvey Reed: I move nominations be made and the election consummated for the person mentioned in the resolution. Seconded.

Dr. Rufus B. Hall: I amend the motion to have a committee of three appointed to find out the party who would desire this position and who would fulfill the duties entailed. Accepted. Carried unanimously.

The Chair appointed Dr. Rufus B. Hall, Dr. R. Harvey Reed, and Dr. A. R. Baker.

Dr. S. B. Hiner reported for the Committee on Ethics.

REPORT OF COMMITTEE ON ETHICS.

Your Committee on Ethics beg leave to report as follows:

That in the matter of the informal charges preferred against Dr. W. J. Taylor, of East Liverpool, and Dr. J. W. Collins, formerly of Steubenville, now of Columbus, that the same be referred to their respective local societies for investigation and action, for the following reasons: First, that in the opinion of your committee, it is the duty of each Auxiliary of this Society to discipline its own members; second, that the charges not being made in due form as prescribed by the By-laws of this Society, no action can be taken thereon.

Your committee further recommends that it shall be made the duty of the Secretary to provide a suitable book for the recording of all charges and proceedings thereon, which may be taken in the future by the Committee on Ethics.

S. S. THORN, *Chairman.*

Dr. Collamore moved the adoption of the report. Seconded and carried.

Adjourned.

THURSDAY EVENING SESSION, 8:00 P. M., MAY 28, 1896.

Dr. C. R. Holmes, Cincinnati: "Demonstration of Fifty Sectioned Heads (moist preparations)."

It was moved, and the motion prevailed, to appoint Dr. C. N. Smith on the Publication Committee, in the place of Dr. Colter, who is not now a member of the Society.

A. B. Richardson, M. D., Columbus: "Influence of Heredity." (Read.)

Jas. T. Whittaker, M. D., Cincinnati: "The Neuroses of the Stomach." (Read.)

Vote of thanks was tendered Drs. Richardson and Whittaker.

Adjourned.

Banquet at the Chittenden.

FRIDAY MORNING, MAY 29, 1896.

Committee of Arrangements for next meeting: Dr. W. H. Humiston, Dr. A. R. Baker, Dr. J. F. Hobson, Dr. J. E. Cook, and Dr. A. F. House, were announced by President-elect Larimore.

Minutes of Thursday afternoon and evening were approved.

Dr. W. H. Humiston moved that the money in the hands of the Legislative Committee be turned over to the Executive Committee of the Special Committee, of which Dr. Coleman is chairman. Seconded and carried.

Dr. Cook, Cleveland, moved to change the date of meeting of the State Society next year, stating the Cleveland delegation had decided to invite the Society for the third Wednesday in May. The motion was seconded and carried.

The Secretary read an amendment, proposed by Dr. F. C. Larimore, that not to exceed fifteen minutes be allowed to the reading of any paper.

Dr. J. F. Baldwin: I am opposed to the amendment. I think we have not had a paper presented to the Society for a number of years that could not be condensed to ten minutes. As a result of the fact that many papers were allowed to run over time, this meeting, many papers will be read only by title. I think the President ought to call down every man at the end of ten minutes, with very few exceptions. Of course, the President might use his judgment, and fail to drop his gavel at the end of ten minutes when a paper is unusually interesting and valuable, and does not greatly exceed ten minutes.

The subject was also discussed by Drs. Ransohoff, Foshay, Hubbard, Oliver, Thorn, Lawrence, Hall, and Sawyer.

A rising vote being called for (a three-fourths vote being required) the motion was declared lost.

Dr. Rufus B. Hall, Cincinnati: The committee appointed last evening by the Chair, to select a delegate to represent this society in Congress against the anti-vivisectionists, report, with your permission, the name of Dr. L. B. Tuckerman, of Cleveland, for election to that position.

It was moved and seconded to adopt. Carried unanimously.

Chas. N. Smith, M. D., Toledo: "Pelvic Hematocele and Hematoma." (Read.) Discussion: Dr. D. Tod Gilliam, Columbus; Dr. M. Rosenwasser, Cleveland; Dr. Rufus B. Hall, Cincinnati; Dr. J. F. Fitzsimmons, Bucyrus; closed by Dr. Smith.

R. Harvey Reed, M. D., Columbus: "A Review of the Results of the Author's Method of Anchoring the

Kidney." (Read.) Discussion: Dr. Joseph Ransohoff, Cincinnati: Dr. Rufus B. Hall, Cincinnati; closed by Dr. Reed.

Frank W. Thomas, M. D., Marion: "Strychnine and Nitroglycerine in the Treatment of Pneumonia." (Read.) Discussion: Dr. C. R. Reed, Middleport; Dr. Kline, Portsmouth; Dr. C. A. Hough, Lebanon; Dr. G. W. Morehouse, Sparta; closed by Dr. Thomas.

Dr. J. C. Oliver, Cincinnati, asked permission to have his paper read by title, and also to have Dr. Larimore's discussion included in the Transactions. Granted.

J. F. Baldwin, M. D., Columbus: "The Technique of Abdominal Supravaginal Hysterectomy." (Illustrated talk.) Discussion: Dr. M. Rosenwasser, Cleveland; Dr. Rufus B. Hall, Cincinnati; closed by Dr. Baldwin.

John P. Sawyer, M. D., Cleveland: "Some Observations of Malarial Organisms in Close Connection with Typhoid Fever." (Read.)

J. W. Wright, M. D., Columbus: "The Use and Abuse of Local Medication in Eye Affections." (Read.)

W. H. Humiston, M. D., Cleveland: "A Method of Preventing Thirst after Celiotomy, with a Study of the Urine." (Read.) Discussion: Dr. Joseph Ransohoff, Cincinnati.

Dr. J. F. Lawrence moved that the balance of the papers be read by title. Seconded by Dr. Ransohoff. Carried.

Dr. R. Harvey Reed moved that the papers passed by be referred to the Committee on Publication. Seconded and carried.

Minutes approved.

After expressing thanks to the members and committees for courtesies shown and efficient services rendered, President Milliken declared the convention adjourned.

DELEGATES.

The following presented their credentials:

Adair, W. G.----Beverly, Washington Co. Med. Soc.
Beeson, H. A.----Leesburg, Highland Co. Med. Soc.
Brown, J. E.----Columbus, Columbus Acad. of Med.
Clark, W. R.----E. Liverpool, E. Liverpool Med. Soc.
Cooperrider, C. M.----Columbus, Columbus Acad. of Med.
Dixon, W. A.----Ripley, Brown Co. Med. Soc.
Faucett, R. C.----N. Jackson, Union Med. Assn. of Columbiana.
Frickle, E. H.----Cutler, Washington Co. Med. Soc.
Glenn, W. W.----Hillsboro, Highland Co. Med. Soc.
Hasencamp, O.----Toledo, Toledo Med. Association.
Hughes, F. M.----Sandusky, Erie Co. Med. Soc.
Jones, W. A.----Toledo, Toledo Med. Association.
Judkins, E. S.----Highland, Highland Co. Med. Soc.
Kinsman, D. N.----Columbus, Columbus Acad. of Med.
Lawrence, F. F.----Columbus, Columbus Acad. of Med.
McKim, F. E.----Marietta, Washington Co. Med. Soc.
McCloud, J. J.----Marion, Marion Co. Med. Soc.
Messenger, A. C.----Xenia, Greene Co. Med. Soc.
Moore, D. L.----Columbus, Columbus Acad. of Med.
Moore, H. M. W.---- " " " "
Ray, J. B.----Omega, Pike Co. Med. Soc.
Reed, C. R.----Middleport, Meigs Co. Med. Soc.
Rouse, W. L.----Paintersville, Greene Co. Med. Soc.
Stevenson, Y.----Georgetown, Brown Co. Med. Soc.
Thomson, F. S.----Crayon, Champaign Co. Med. Soc.
Tuckerman, L. B.----Cleveland, Cuyahoga Co. Med. Soc.
Wilcox, S. S.----Columbus, Columbus Acad. of Med.
Wilson, E. F.----Columbus, Columbus Acad. of Med.

NEW MEMBERS.

The following Doctors of Medicine were elected to membership:

1. A. C. Messenger, O. S. and S. O. Home, Xenia, Greene Co. Med. Soc.
2. Frank E. Plummer, Coalton, Jackson Co.
3. A. C. Wolfe, Academy of Medicine, Columbus.
4. R. C. Faucett, N. Jackson, Union Med. Assoc. of Columbiana.
5. J. Alexander Davisson, Eldorado, Preble Co. Med. Soc.
6. Edgar F. Collins, Mt. Sterling, Madison Co.
7. Harry B. Bertolette, Shreve, Wayne Co. Med. Soc.
8. C. L. Judy, Miamisburg, Montgomery Co. Med. Soc.
9. Josiah C. Haney, Dalton, Wayne Co.
10. F. C. Griffis, Mt. Gilead.
11. G. W. Clemson, Thornville, Perry Co. Med. Soc.
12. A. J. Crawford, Glouster.
13. R. A. Brown, Circleville.
14. Joseph W. Lowry, Ironton, Lawrence Co. Med. Soc.
15. J. B. Ray, Omega, Pike Co. Med. Soc.
16. W. N. Bradford, Cambridge.
17. Gilman R. Davis, Ironton, Lawrence Co. Med. Soc.
18. Geo. M. Waters, Columbus, Columbus Acad. of Med.
19. L. D. Hamilton, Marion, Marion Co. Med. Soc.
20. Willard A. Hall, Chillicothe, Ross Co. Med. Soc.
21. F. Cowan, Ashland, N. C. O. Med. Soc.
22. Louis Rogers Culbertson, Zanesville.
23. R. J. Wenner, Cleveland, Cleveland Med. Soc.
24. C. F. Hoover, Cleveland, Cleveland Med. Soc.
25. John G. Spenzer, Cleveland, Cleveland & Cuyahoga Co.
26. Wm. Lincoln, Cleveland, Cleveland Med. Soc.
27. C. E. Thompson, No. Lewisburgh, Champaign Co.
28. Frank Winders, Columbus, Hancock and N. W. O.
29. C. G. Gray, Ironton, Lawrence Co. Med. Soc.
30. L. E. Niles, Springfield.

31. Walter W. Brand, Toledo, Toledo Med. Associa.
32. Walter H. Snyder, Toledo, " " "
33. Wm. L. Rouse, Paintersville, Greene Co. Med. Soc.
34. E. T. Hayward, Waterford, Washington Co.
35. E. A. Harper, Columbus
36. Wm. N. Cole, Columbus Academy of Med.
37. S. S. Haiderman, Portsmouth, Hempstead Mem. Acad.
38. John W. Irvin, Magnetic Springs, Ashland Co. & N. C. O.
39. W. P. Clay, Elgin, Ohio.
40 Chas. S. Means, Columbus, Columbus Acad. of Med.
41. Wm. E. Lower, Cleveland, Cleveland Med. Soc.

IN ATTENDANCE AT COLUMBUS MEETING.

Adair, S. G.....Beverly.
Alcorn, J. B.....Gallipolis.
Allard, L. D.....Portsmouth.
Andre, O. C .....Waverly.
Ayres, S. C.....Cincinnati.
Bain, F. D.....Kenton.
Baker, A. R.....Cleveland.
Baker, J. P.....Findlay.
Baldwin, J. F.....Columbus.
Ballinger, J. B.....Webster.
Barnhill, J. N.....Columbus.
Beardsley, C. E.....Ottawa.
Bennett, W. C.....Iberia.
Bertolette, H. B.....Shreve.
Blackburn, M. E.....Columbus.
Blake, F. W.....Columbus.
Blake, W. H.....Shadeville.
Bleile, A. M.....Columbus.
Boertsler, G. W.....Lancaster.
Boggess, E. M.....Washington C. H.
Bonner, H.....Dayton.
Brand, W. W.....Toledo.
Braytor, Asa.....Carey.
Brown, E. O. S.....Beaver.
Buechner, W. L.....Youngstown.
Carpenter, E. G.....Cleveland.
Carpenter, Julia W.....Cincinnati.
Chapman, B.....Copley.
Chapman, W. C.....Toledo.
Chidester, C. W.....Delaware.
Clark, W. R.....East Liverpool.
Clouse, G. M.....Columbus.
Coleman, N. R.....Columbus.
Collamore, G. A.....Toledo.

Colville, G. H.....Harrisville.
Conklin, W. J.....Dayton.
Conn, Eli.....Akron.
Cook, A. F.....Sandusky.
Cook, J. E.....Cleveland.
Cooper, A.....Columbus.
Corlett, Wm. Thos.....Cleveland.
Courtright, A. P.....Circleville.
Cowan, F.....Ashland.
Crane, A. M.....Marion.
Crawford, A. J.....Glouster.
Culbertson, J. C.....Cincinnati.
Davidson, N. P.....Hilliard.
Davis, G. R.....Ironton.
Denman, W. C.....Marion.
Deuschle, W. D.....Columbus.
Dick, W. L.....Columbus.
Dine, C. L.....Minster.
Dixon, W. A.....Ripley.
Dorsey, J. F.....Dresden.
Duncan, A. M.....Bucyrus.
Duncan, J. A.....Toledo.
Dutton, C. F.....Cleveland.
Eakins, J.....Patriot.
Emerick, E. J.....Columbus.
Entrekin, F. W.....Findlay.
Erwin, A. J.....Mansfield.
Evans, Mary L.....Ada.
Everts, O.....College Hill.
Fackler, J. E.....Versailles.
Fassig, J. M.....Zanesville.
Faucett, R. C.....N. Jackson.
Fitzimmons, J. F.....Bucyrus.
Folk, P.....Deavertown.
Foshay, P. M.....Cleveland.
Fowler, S. W.....Delaware.

Fox, J. F----------New Philadelphia.
Gahm, J. L----------Jackson.
Gibbon, H. B----------Tiffin.
Gillette, W. J----------Toledo.
Good, H----------Sulphur Grove.
Goodsell, E. J---------- Norwalk.
Gordon, J. L., Jr----------Columbus.
Gordon, P. A----------Junction City.
Græfe, Chas----------Sandusky.
Gray, C. G----------Ironton.
Greene, W. J----------Columbus.
Guerin, Z. F----------Columbus.
Haldeman, J. S----------Zanesville.
Hall, R. B----------Cincinnati.
Hall, W. A----------Chillicothe.
Hartinger, D. T----------Middleport.
Hasencamp, O---------- Toledo.
Havens, W. V----------Columbus.
Hayes, J. D----------Somerset.
Hayward, E. T----------Waterford.
Heffner, G. W----------Circleville.
Henry, A. G----------N. Baltimore.
Hersh, E. G----------McComb.
Hewetson, A. H----------St. Clairsville.
Hewetson, H. L----------Uhrichsville.
Hiner, S. B----------Lima.
Hines, J. A----------Van Wert.
Hitchcock, S. A----------Elida.
Hobson, J. A----------Flushing.
Hobson, J. F----------Cleveland.
Hoff, J. W----------Pomeroy.
Hoglan, G. W----------Columbus.
Holman, A. W----------Circleville.
Holmes, W. W----------Columbus.
Holston, J. G. F----------Zanesville.
Howard, A. B----------Cuyahoga Falls.

Hubbard, Thomas----------Toledo.
Hughes, F. M----------Sandusky.
Hulin, O. W----------Greenford.
Humiston, W. H----------Cleveland.
Ireland, S. A----------Washington C. H.
Jackson, T. W----------Akron.
Jacobs, H. H----------Akron.
Jacobs, M. M----------Hamilton.
Johnson, Alice M----------Columbus.
Jones, H. S----------Columbus.
Jones, T. W----------Columbus.
Jones, W. A----------Toledo.
Judy, H. S----------Miamisburg.
Kahn, L----------Columbus.
Kerr, J. M----------Columbus.
Kemp, L----------Bucyrus.
Kline, P. J----------Portsmouth.
Landon, C. P----------Columbus.
Larimore, F. C----------Mt. Vernon.
Lash, J. W----------Chillicothe.
Lawrence, J. C----------Columbus.
Lawrence, F. F----------Columbus.
Lehman, C. W----------Eaton.
Lenhart, C. M----------Zanesville.
Lewis, W. C----------Rushville.
Lincoln, Wm----------Cleveland.
Lower, G. T----------Port Washington.
Loving, Starling----------Columbus.
Lowry, J. W----------Ironton.
Lucas, V. C----------Cleveland.
Lusk, S. B----------Waynesfield.
Lyman, C. N----------Wadsworth.
McClure, J. A----------Columbus.
McDougal, J. G----------N. Lexington.
McGavran, S. B----------Cadiz.
McIlvane, W. H----------Kenton.

McIntire, Wm.....Warrensburg.
McKim, F. E.....Marietta.
McMurray, A. B.....Marion.
Martin, Jas.....Fredericksburg.
Mattoon, F. N.....Plain City.
May, J. B.....New Holland.
Meagley, F. L.....Toledo.
Means, C. S.....Columbus.
Merriman, D. J.....Painesville.
Merz, C. H.....Sandusky.
Messenger, A. C.....Xenia.
Milliken, B. L.....Cleveland.
Millikin, Dan.....Hamilton.
Mills, C. H.....Toledo.
Moore, D. L.....Columbus.
Moore, H. M. W.....Columbus.
Morgan, J. F.....Jackson.
Nau, J. G.....Carroll.
Negelspach, O.....Millersburg.
Neil, A.....Columbus.
Neuforth, L.....Mt. Healthy.
Niles, L. E.....Springfield.
Noble, C. D.....Oberlin.
Norris, T. B.....Alton.
Nungesser, J. J.....Cleveland.
Oliver, J. C.....Cincinnati.
Oster, L. W.....Cleveland.
Overly, J. E.....Columbus.
Parker, C. A.....Columbus.
Philips, W. S.....Columbus.
Pickering, G. W.....Urbana.
Purdy, W. E.....Killbuck.
Quinn, A. T.....Wilmington.
Ransohoff, Joseph.....Cincinnati.
Rankin, T. W.....Columbus.
Ranney, S. W.....New Albany.

Ray, J. B.....Omega.
Ray, J. H.....Coalton.
Reed, C. A. L.....Cincinnati.
Reed, C. R.....Middleport.
Reed, R. H.....Columbus.
Reed, T. J.....Massillon.
Reeve, J. C.....Dayton.
Rhu, A.....Marion.
Richardson, A. B.....Columbus.
Robb, Hunter.....Cleveland.
Rosenwasser, M.....Cleveland.
Rouse, W. L.....Paintersville.
Roush, Wm.....Spencerville.
Rowe, Geo. T.....Circleville.
Rowles, W. T.....Columbus.
Rudy, A. S.....Lima.
Sampson, G. W.....Upper Sandusky.
Sawyer, J. P.....Cleveland.
Schueller, J. B.....Columbus.
Scott, X. C.....Cleveland.
Shaunecker, S.....Shanesville.
Sharp, A. W.....Columbus.
Sherman, H. G.....Cleveland.
Sinnett, E.....Granville.
Skeel, R. E.....Cleveland.
Slocum, C. E.....Defiance.
Smith, C. N.....Toledo.
Smith, J. M.....New Philadelphia.
Snyder, D. J.....Scio.
Snyder, S. P.....N. Bedford.
Souders, R. L.....Nevada.
Southard, J. Q.....Marysville.
Spenzer, J. G.....Cleveland.
Spiers, H. H.....Ravenna.
Stamm, M.....Fremont.

Stansell, J. A.....Forest.
Stevens, E. S.....Lebanon.
Stevens, J. L.....Mansfield.
Stevenson, Y.....Georgetown.
Stewart, T. H.....Church Hill.
Stillman, F. L.....Columbus.
Stockton, Geo.....Columbus.
Stueber, F. G.....Lima.
Taylor, C. M.....Columbus.
Taylor, F. C.....Cleveland.
Thomas, F. W.....Marion.
Thompson, F. E.....Marengo.
Thompson, J. A.....Cincinnati.
Thomson, F. S.....Crayon.
Thorn, S. S.....Toledo.
Thorner, Max.....Cincinnati.
Upson, H. S.....Cleveland.
Virtue, F. M.....Sulphur Springs.
Waite, J. E.....Lodi.
Ward, O. W.....Duncan Falls.
Warner, C. J.....Congress.
Warner, Frank.....Columbus.
Wegg, J. A.....Rollerville.
Weeks, D. O.....Marion.
Welsh, A. J.....Mt. Sterling.
Whitehead, H.....Columbus.
Wilcox, S. S.....Columbus.
Williams, W. E.....Jackson.
Wilson, E. F.....Columbus.
Wire, G. W.....Wilmington.
Woodruff, E. W.....Columbus.
Woodruff, L.....Alton.
Woodworth, W. H.....Delaware.
Workman, J. C.....Uniontown.
Wright, J. H.....New Lexington.

Wright, J. W----------Columbus.
Wright, T. M----------Troy.
Young, D. H----------Chicago, Ohio.
Zebold, A. M----------Hector.

DAN MILLIKIN, M. D.

Dr. Dan Millikin, President of the Ohio State Medical Society 1895–96, was born in Hamilton in April, 1845. His great-grandfather Millikin came from the north of Ireland, and settled in that favorite region of Scotch-Irish, Western Pennsylvania, and the family were prominent in the Revolutionary War. John M. Millikin, his father, a successful lawyer, removed to a fine farm in Hamilton in 1844. "Doctor Dan" is one of a long succession of Doctors Millikin practicing in Hamilton County, his son, Dr. Mark Millikin, being the sixth in ninety years.

Agriculture and horticulture entered into the training of his early life. This influence is very apparent in his love of nature and the study of her ways. In the early morning hours of spring and summer he finds wholesome recreation in his garden, spading and philosophizing, trimming and moralizing, caring for flowers and indulging in poetic fancies.

The natural sciences, and especially chemistry, had attractions for him, and in 1863 and 1864, soon after completing the high-school course, he took a special course at Yale. For several years he was engaged in general studies and journalistic work, and subsequently he was offered W. A. Croffut's place on the Minneapolis *Tribune*. He acquired a medical degree partly as an accomplishment, but soon found himself "in love with sick people," and his enthusiasm has never abated.

In 1884 he was called to lecture on Hygiene and Medical Jurisprudence in Miami Medical College, and in 1886 occupied the chair of Medical Chemistry. In 1888 he

was Professor of Materia Medica and Therapeutics. He resigned college work in 1893.

His superior natural gifts as lecturer and teacher enabled him to stir the hearts and arouse the intellects of his students as can very few didactic lecturers in this country. A conscientious and skillful clinician, thoroughly versed in the physiological actions of drugs, and, above all, having a very proper respect for *vis medicatrix naturæ*, we find in him a combination of the ideal qualifications of a physician.

PRESIDENT'S ADDRESS.

A STUDY IN CREDULITY.

DAN MILLIKIN, M. D., HAMILTON.

Primeval man, the child, the degenerate—these are all superstitious in high degree. Particularly is this true of the savage. Each thing in nature that can attract his notice is or contains a spirit, and it is not alone the grand and beautiful, the cloud, the cataract, the rainbow, the forest, the ocean, the thunder, which the savage personifies, but little trivial things as well. Witness the medicine-bag or the amulets worn commonly by savages and sometimes by Christians; they consist at best of a poor picture and a few words, a bunch of hair, an odd-shaped bit of stone or wax, a bean of curious color, and so on.

This reveals mind in its credulous stage—a state which knows nothing to be beyond belief; and I place it opposed to the scientific state of mentality which challenges all things, and accepts nothing without rigorous proof leading up to demonstration or to strong probability. The first state is primitive, appertaining to the childhood of the individual and of the race, and it is the state to which the degenerate man reverts; the questioning, skeptical, scientific mental attitude is one which, on the contrary, belongs to man in his highest racial development and his full personal health.

In all rude times and all early stages of development, the superstition of man has found its food in human disease, and naturally so; for, if anything attracts man's attention as strange and out-of-the-way, it is his departures from the normal standard of health; and it is perhaps essentially probable that men and women of simple mind should develop a poetic theory that disease is a spirit at work within the body.

With such doctrine as this (and it is not long before the vague superstition becomes definite doctrine) comes treatment which is not altogether illogical. The savage doctor, the medicine-man, prophet, priest and conjurer (for all these functions are confused and blended in rude society), addresses his practice to the casting out of devils, or demons, or half-personified morbific influences. With rattles and drums and dreadful vocal noises he seeks to frighten the evil spirit from its victim, and sometimes, doubting his own endurance, he calls upon neophytes or fellow-tribesmen to assist by relays. The patient's poor carcass is subjected to the most intolerable physical abuse, not because the master of the incantations is cruel or spiteful, but because he has a more or less defined belief that it must be made the unfit habitation for the maleficent spirit which induces sickness.

In a little higher state of civilization, our state, for example, the medicine-man outgrows gross fetishism, and leaves the crass credulity to the patients, while he enters a realm of certitude. And small wonder is it if the doctor's emancipation is not complete. The influence of his patients is particularly degrading, for to most of them there is still present the savage conception of a personal spirit behind every morbid manifestation, and it is a strong mind which can stand alone and not finally be influenced by the notions of those among whom he works. This thought comes to me

often when I hear of a patient speak of his disease as "it." One says, "it" left the stomach and went to the brain. We often hear that "it" *struck in* with the most serious results. I have been called out of bed to see a patient who was awakened with a numbness of the toe, and straightway sent for his brother, his doctor and his priest, lest "it" should creep up to some vital organ and send him to the realm of shades in shameful informality. And very recently I saw a poor creature with a slowly failing heart and swelling legs, who with the tincture of iodine had painted a garter about her leg in the vague hope that this might prevent "it" from crawling up to drown her.

I really think that some such idea is the underlying principle which leads to the use of cataplasms, liniments and salves applied to the skin for the relief of internal disease. Whatever the doctor may think, the patient thinks that these applications are to drive "it" from its prey.

And while we are generalizing, we may assume that Hahnemann, who was by no means a monster nor a simpleton, was led into his fantastic conception of one morbific principle for all diseases, *psora*, as he called it, by the continued pressure of his patients' impressions. And I think that we may, in charity, declare that the same impression, not recognized or expressed, is derived from the public and reflected upon people of intelligence and authority above the common herd, until, under the tremendous pressure of flattering local public opinion they become healers of one sort and another—faith-curers, prayer-curers, mind-healers, Schlatters, Schaffers, and the like. There is in the public, and finally in the performers, a misty hope that in some occult way the mysterious person or the holy person will drive out the wicked morbific something which makes disease.

Even in health the untrained imagination of the average man is apt to run away with his judgment, or, not to be ungallant, let us say with *her* judgment. To him, to her, the worthiest things are the mysteries of life; what lies within commonplace experience is simply vulgar; what is on its face preposterous and incredible is yet, to the unscientific mind, most likely of all; for to the untrained, unscientific mind, likelihood is only a little province in the beautiful land of ought-to-be. Hence the power of nostrums and the perennial charm of plain vulgar quackery. The average woman knows that she ought to be an object of interest, and hence slightly amiss in her pelvis, and it follows that somewhere in the cultured Eastern States there ought to be, and hence there is, a calm, benevolent Lydia Pinkham, who was herself highly interesting and slightly diseased until she made a discovery of a medicine that is good for all women, and so was restored to placid beauty. And the citizen of average constipation feels that there ought to be, and hence there is, a highly chromatic maiden in the beautiful sunset land of California who reaches for figs for the relaxation of the nations, while the Prussian-blue Pacific Ocean wimples behind her in orthodox manner. The commercial traveler feels that there ought to be, and hence there is, a damiana wafer able to support him when he is about to get into trouble, and a snaky specific of three serpentine S's, or a five-day "Zip" to restore him to usefulness after trouble has come. To the average patient there ought to be many more things true, and, because they ought to be true, they are true for the dreamer. There ought to be clairvoyance, supersensuous insight or spiritual vision, or metaphysical powers to aid specially gifted ones to see by the mind's eye the internal diseases of men and women, without the coarse methods based upon the tactile sense or the eye of sense, or

common sense. There ought to be a drug-essence, or drug-spirit, or drug-soul, remaining long after the drug itself has been diluted to the vanishing point, and because it ought to be so, it *is* so for fools and the old-time homeopaths. And on the other hand there ought to be great virtue in strange medicines, and they should have power in proportion to their outrageously bizarre characters.

We hear this stuff year in and year out; we breathe it; we weary ourselves resisting and explaining, and presently we cease to protest. Comes there ever a time when we are ready to assume the mental attitude of the mass? Have you yielded? Have I?

The barbaric doctor was certainly a professor of demonology; the doctor of the civilized state has every sort of invitation and pressure to return to that sort of practice. The error that is involved in the assumption that there is a sort of demoniac possession in every case of disease, dies so hard that it has persisted among the most enlightened physicians down to very recent times. It was the basis of treatment two generations ago. Bleeding was but an attempt to open the gate and let the evil thing flow out. Purging and vomiting had the same logical justification. Intolerable drugs were put into the body, up to very recent years, with a more or less definite idea of making it untenable to any other spirit than the owner, and the practice was carried so far that it was oftentimes a very nice question whether the landlord of this house of clay—the Ego himself—had not better move out and find quieter quarters on the other side of the street. For many years no excrement, no carrion, no parasites, were too disgusting to be swallowed upon a shadowy theory that they would expel the incarnate morbific principle. At its worst this sort of practice has disappeared, and there is only one dainty "school" of medicine which administers menstrual,

leucorrheal, venereal, and purulent discharges internally, and which saves some small shreds of pretense to super-elegance by great attenuation of the poisonous filth, like the poor girl who admitted that she had borne a fatherless baby, but pleaded in extenuation that it was such a little one!

Ah, well! let us not rail overmuch against our homeopathic friends. Many of us give cod-liver oil, and a very few of us still use castor and musk and valerian and asafetida; and, since this address is not debatable, I venture to remark that not one of these substances has any notable character save a vile stench.

And I would greatly desire to have a one-sided debate with the surgeons. They are not far from a belief that even a wounded patient needs some sort of a charm or exorcism, and your surgeon, dear man, carries his voodoo in a dredging-box and calls it—iodoform. Converse with him about this drug, and note his peculiar psychologic state. He doesn't precisely say that it is a lucky thing to use, though that is in his heart of hearts; he merely says that it finds its place in the most modern treatment of wounds. He will not say that it is an efficient bactericide; it is too easy to drive him from that ground. And few will say, nowadays, that a wound needs a bactericide when it comes to dressing. Press your surgeon hard enough, and he will tell you that iodoform slowly gives off iodine in the wound, or on its edges; but he will not tell you why it is better than other substances which do the like, nor will he impart to you a reason why he does not use iodine itself in known quantity. Sometimes he wisely calls it an alterant, and sometimes a famous cicatrisant, but he never tells, and never can tell what there is to alter in a wound, nor why it should be altered, nor will he admit that he operates to procure a cicatrix nor boasts of the cicatrix after healing. Take him off his guard, and he

will declare that the surgeons have developed the fact that any foreign body or drug is an impertinence when applied to a wound during or after operation; and yet, as a dyspeptic dog returns to nutriment imperfectly chymified and regurgitated, so your surgeon returns to his fetish, and will return to it as long as it retains its laboratory odor to impress all who handle it or suffer it. I make no doubt at all that the use of this druggiest of drugs indicates a survival of credulous, superstitious mental habits which have persisted from the time when surgeons sought to cast out something morbid and actively malignant.

When the medical profession of Europe had worked out the humoral theory of the genesis of disease, it had struck out a most useful hypothesis which included and systematized a great number of facts. And yet, as it was received and adopted for absolute truth, it was only a higher form of personification of the morbific principle, for it substituted a vague and shadowy entity for the half-corporeal demon which had haunted pathology for so many centuries.

We do much better now. We have a pathology of the zymotic diseases which is harmonious and strictly scientific, and conformable to the true spirit of induction. But it falls in my way to say, to-day, that it is not at all to the credit of our craft that the old credulity breaks out anew with every announcement of progress in bacteriology; greedy, gulping acceptance of principles, unproved and half-proved, in bacteriology is the disgrace of the day; most of us have been obliged to change front three times on the bacteriology of diphtheria; and it is certain as death and taxes that we shall play the jumping-jack through future years if we do not, after the manner of scientific men, receive valuable hypothesis as hypothesis.

And while we are making disagreeable confessions, it

may be well to say that there is now raging in the profession a pestilence which is somewhat analogous to the nostrum-frenzy among the laity. If it were manly to shuffle and find excuses for this, we might cite, as the inducing cause, the greed of manufacturing druggists, who are not content with legitimate profits from the preparation and marketing of legitimate drugs, and who are by many devices cultivating the notion that they have each a monopoly of the stock of this or that drug or compound of drugs, and especially that they have each a monopoly of the knowledge requisite for the compounding of some "special preparations." As I look back over the vista of a number of years, it appears to me that the beginning of this evil in its present phase was the great success of Fellows' Compound of Syrup of Hypophosphites. It was pushed upon the profession by the most skillful advertising, and it was slyly presented to the attention of the laity as well, though not in a manner very offensive to the profession, and its success as a money-maker was known to be very great. Two evils adhere to it: firstly, the manufacturers pretend to be making it under superior secret methods so that no one outside of their laboratory can even imitate it; and, secondly, the physicians who use it, take it as it is, without even a pretense that they know the names or the doses of its several ingredients.

It has its imitators by the dozens and hundreds. Not only does every manufacturer put forth a Syrup of Hypophosphites, secret and superexcellent, but each drug firm is sending out hundreds of similar quack preparations representing or purporting to contain many valuable drugs. And there is every evidence that the trash is bought in enormous quantities by physicians. It is only a short time since a gentleman who visited me for years, selling me most excellent pills of the honest drugs, came into my office with a new sample-case filled

with the preparations of one firm sold under trade-marks. He had "Respirazone," to cure asthma; "Nepenthe," for the relief of flux, diarrhea, cramp colic, cholera morbus, congestion and neuralgia of the stomach and bowels, cholera infantum and sour eructations; he had "Nephritica," to cure all diseases of the bladder and kidneys, including chronic albuminuria, and incidentally it relieved "dragging sensation in end of the penis," and "dragging sensation in testicles and ovaries"; he had an "Elixir Iodo-Bromide of Calcium Compound," which would cure more diseases than I can tell you of; he had "Diphtherine," which by its terminal syllable might be an alkaloid, but is not; he had the Tilden Company's "Wine of Wild Cherry, Ferrated," which would cure most diseases if given long enough; he had "Maltopepsine" and an elixir of the same, and tablets too, and certificates from Indian Territory to Vermont, including a few from college professors; he had two Syrups of Hypophosphites and a "Hematonic"; he had the Tilden Company's "Beef, Iron and Wine," and, better yet, he had "Beef, Iron and Rye"; he had a "Calisaya Cordial"; he had a "Firwein"; and he had a half-dozen more, some protected by trade-marks and some not. This salesman was one who had been selling legitimate drugs in the form of pills for many years, and he told me that he was working for the quack firm at an advanced salary, and that he was selling oceans of their special preparations. He was only one of thousands.

And the abominable infection is spreading. Only a short time ago a very able physician asked me if a patient we had been treating in common had not better take a ferruginous tonic for a short time. I agreed, and asked him his preference; he lightly said, "Oh, give him some one of the newer forms of iron." I inquired further, and found that he had a quack prepara-

tion in mind, and when I spoke lightly of it he looked on your President pityingly, as one looks on an imbecile. From a Southern State a bright young doctor sends me word of one of my old patients who is slowly dying with a senile heart; he is treating the old gentleman as well as he can, for he is giving him somebody's "Elixir of Three Chlorides," though neither he nor I know what three chlorides, nor what the dose may be, nor what the three several indications may be. He also is one of thousands, for it is not too strong a statement to say that the whole American medical profession have gone daft over these preparations of the manufacturing pharmacists, sold by pure impudence and bought by the doctors through pure credulity. St. Louis is the headquarters of this shameful traffic, but every city and many of the small towns have their firms, all intent on getting rich through mystery and loud pretense.

Has the doctor or dentist need of an antiseptic? Surely he ought to be able to make his selection among the known antiseptic substances, or to make a compound, if that were wise; but it is ten to one that he will resort to some compound put forth through the avenues of trade under a taking name; he will resort to "Listerine," or "Borolyptol," or "Sennine," or a dozen more.

Is an alterant needed? Instead of using one well-known drug, or peradventure two, in proper form and dose, the modern doctor looks to St. Louis again, and buys a mixture of unknown composition called "Iodia"; or he finds some of those already named thrust into his hand; and our neighbor, Indianapolis, has the "Succus Alterans," with certificates good in Coohatchie, Columbus, or London. Aye, and there is "Arsenauro," most mysterious of all, always advertised on the outer cover of the *Journal of the American Medical Association.*

Has he need of an hypnotic? St. Louis is to the front again with "Bromidia."

Has he a patient with a disease of the bladder? Diagnosis is not worth the time it takes; any drug firm can give him a sure and secret "Diuretic Elixir"; St. Louis offers him "Lithiated Hydrangea," to cure all diseases of the bladder; and elsewhere he may obtain "Sanmetto," better than any.

Is the American doctor in need of a coal-tar derivative, antipyretic, analgesic and antiseptic? We have some good ones of known chemical composition and well-studied physiological reaction, but St. Louis presents the doctor with so many pocket-books and slates and pencils and so much literature that he takes his "Antikamnia" quite forgetful of the fact that it is easily proven to be a rascally, dirt-cheap mixture, and no definite chemical compound at all.

It is the special object of this address to call your attention to the fact that these so-called special preparations do not differ in any regard from the patent medicines which are swallowed in such quantity by the laity to feed the inextinguishable laughter of the doctors. It is not in order for you or me to sneer at the girl who buys love-powders in the kitchen, or madame who buys subscription-books in the parlor, if we, snickering in the office, are seduced by the drummer's smooth tongue into the purchase and use of secret remedies. The farmer buys seed oats at extravagant prices, and it pleases the medical profession mightily to dwell upon his disappointment when harvest-time comes and the farm and barns are not quite buried out of sight by the promised avalanche of grain. We have our fun with the poor deluded victims of the shell racket, the bunco games and the gold-brick investment. Indeed, yes; we read the papers; we have heard the chimes! But shall we not curb our mirth and our affectation of superior wisdom if we use the much-advertised stuff which is piled upon our tables? For are they not simply proprietary

medicines and patent medicines? I am told that the formula is on each bottle. The formula, indeed! The Egyptian sphinx has a very open countenance, yet the ages have not wrested her secret from her. The Grecian oracles were plain enough; even I have parsed them; but no man could say what they might mean until the fullness of times had come. The formula on each bottle! Spare us such formulas in the kitchen; for if the cook has only the names of her ingredients hinted to her, "combined with aromatics," she will never be able to concretely realize the theoretic difference between pudding and bread, or between plain omelet and baked custard, and the only certainties she will deal out to us will be dyspepsia and consuming wrath. And so the formula on each bottle of quack medicine compounded for credulous doctors, palters with us in a double sense, and carefully conceals what it pretends to reveal.

The advertising of this sort of stuff has become a curse almost unbearable. To say nothing of the pestiferous dudes who visit the doctor in unending procession, dribbling out their parrot phrases and cumbering the earth with their samples, one may be permitted to say that the morning's mail has become a burden to the doctor and to the postman. The Postmaster-General stated officially to the Congress now in session that he carried, each year, nearly 133,000 tons upon which postage is paid at the rate of only one cent a pound, and he has the figures to prove that it costs the Government about eight cents a pound to carry it. It follows that the actual loss to the Government in handling its second-class mail is more than $18,500,000, or an amount greater than one-fifth of the entire postal revenue. While he favors the carrying of honest newspapers at losing rates, he yet cries aloud for legislation which will enable him to exclude "an immense and undesirable

mass of additional matter," which, as he well says, was never dreamt of by the framers of our postal laws, and which fairly swamps the post-office. A very large part of this stuff consists of advertisements sent to physicians, and the impudence of the advertisers rises to its superb climax when they put forth what appear to be journals, even daily journals, as in the case of the Paskola people, and send them out broadcast as "sample numbers," postage free!

And the influence of these trashy journals is perhaps much greater than we have thought. Their literary and scholarly qualities are a minus quantity. They are mere scraps and shreds, sometimes piled together with some little ingenuity to hold the attention, yet utterly debasing to the reader. Gases behave to each other as vacua; medical journals do not. As a debased coinage will surely drive sound money out of sight and out of a country, so bad literature drives out good literature. Read newspapers four hours a day and you will presently become unable to read history, biography or essays, much less that sort of literature which requires study. Carry over the experiment to our domain and read the "Medical Brief," "The Od Quarterly," "The Doctor's Factotum," "The Daily Lancet," or somebody's "New Remedies," and you may by and by become incapable of reading better journals, much less good medical books. *Facilis descensus;* the road to Hades is of sheet asphalt, slightly down grade; it is an avenue where one may smoothly coast down to the pit of inanity with the aid of the journals of the pharmacists, as they call themselves.

Aye, and let us confess that the legitimate medical press is not without taint. I can show you whole issues of the best journals of our land containing no clean advertisements, such as should accost the physician, with the exception of, here and there, a call to drink pale ale,

to buy trusses or artificial legs, or to go to a private lunatic asylum. All other space is evidently for sale to the highest bidder with the lowest notions of our work, and I shame to say that this low fellow with the long purse evidently buys editorial notices of his secret preparations along with other space.

It were vain for us to indulge in this sort of discourse, chiefly damnatory criticism, without some thought of a remedy. I will therefore indulge myself in the pleasure of saying to this Society that there is a certain little book called the Pharmacopœia. It contains the names of 994 drugs or preparations of drugs. If my confrères gain an intimate knowledge of one-half of these, they will have no time nor use for secret mixtures. This book contains the names of all the definite chemical compounds which have been applied to the relief of disease with the exception of a very few which are patented and are imported from Germany, and sold here under license, as I am sorry to say. It names and describes the preparations of all Galenical solutions of curative vegetable substances. It gives tests for purity and strength so that the physician may test or assay his drugs, or may have the work done for him. What would you more?

The Pharmacopœia is the most perfect book known to me. If to me the work of editing it were to be assigned this day, I would introduce some account of the thyroid extract, I would ponder a little space before I admitted any of the toxins or antitoxins, and I would ponder a very long time before I admitted any of the glandular extracts save the one named.

You will please remember that this admirable work is your creation. It was suggested by a physician in 1817; it was put forth in its first edition in 1820. It has been revised, chiefly by your delegates, every ten years. It will be revised again and again to meet expanding knowledge. It is continually open to your criticism;

and each revision is done with due regard to the suggestions of the profession of our country. Do you possess a copy? If not, why not? I submit to you that the number of copies owned and well-thumbed in the State of Ohio should be much greater than the membership of this Society. For, at every point, the Pharmacopœia looks to precision, definiteness, uniformity and invariability in each substance and compound, and it will have nothing of mystery. It takes nothing on trust. It knows nothing of luck. It is a stranger to public opinion artificially coddled. It is scientific. It knows.

If you press me for a further remedy I would prescribe a more careful study of the materia medica from the therapeutic side. Take your hat off to the man who teaches that branch in the medical colleges. The young graduates who have time and money for a post-graduate course need not go with absolute unanimity to master the handicraft of surgery; three out of four had better learn something of chemistry first, and of biology afterward. Nor will I hector the young fellows. The old doctors, if I am not making the greatest mistake of my life, need to relearn and unlearn a vast deal about the materia medica in its simplest elements. There are superstitions in medicine to be sloughed; there are noble certainties to be attained. Throw away your samples and practice medicine!

And now, recalling the manner and the matter of this discourse, I wish in conclusion to protest that it is not my opinion that ours is a credulous profession, judged as a whole. I mark an evil tendency, without the slightest shadow of a doubt that the tendency will be met and neutralized according to the genius of our profession. It must be so! For it has ever been the proud boast of the doctor that he has dissipated doubt and superstition, and has gone far beyond the bounds of his art to bring cer-

tainty and scientific apprehension to the world. Most anciently Hippocrates was the prime interpreter of nature. After him came Aristotle, a physician and one of a long line of physicians, to develop still farther the knowledge of nature and of the logical processes which pertain to close reasoning. His was the greatest name in all the sciences until times comparatively recent. Through the weary dark ages science was well preserved and most advanced by Jewish and Arabian physicians who formed the noblest aristocracy of all, the aristocracy of intellect, and who held place at the courts of popes and caliphs and Christian monarchs alike, in spite of edicts and bulls. I may name to you in earlier times, Avicenna the Arab, Averroes the Moor, the great Maimonides, father and son, predecessors by long years of Jewish doctors like Rabbi Isaac, who looked after the health of Pope Boniface; Mascha, who was physician to Alfonso of Castile; and Zedekias, who was physician and intimate friend of Charles the Bald.

In early time our predecessors stood for certitude. Full 370 years ago Fernel, a court physician, measured a whole degree across Europe and came approximately to the size of the earth, and established for the common mind the fact that it was a sphere as it had never been established before. And the good doctor did this at a time when ecclesiastical authority had it settled infallibly that the earth was flat, and must needs be flat, so that, according to the Scriptures, all the inhabitants could see the Lord descending through the air!

Aye, we stand for certainty! It was the good and gentle doctor Copernicus who first made the complete mathematical demonstration that the earth was no central body but one of many bodies which revolve about the sun. And it was the wretched Galileo, whom I claim as a doctor by virtue of his five years' study under Cæsalpinus, who searched the heavens with his little telescope

and took the heliocentric doctrine forever out of the domain of hypothesis. He first saw the valleys of the moon and the spots on the sun, and brushed aside forever the monkish doctrine of the perfection of the heavenly bodies. He saw the satellites of Jupiter—a little heliocentric system amid the greater; he accepted the priestly challenge, and showed the phases of Venus. He saw forty fixed stars in the Pleiades, and, by this astonishing apparition alone, revealed the greatness of the cosmos and the infinite littleness of earth. And finally, nearly three hundred years ago, this gentle and pious doctor laid down the doctrine, which, accepted, would have saved oceans of good blood, that the Scriptures were intended to be solely a religious guide and not as a scientific authority.

The very constitution of the earth was worked out to a scientific stage by doctors of medicine. It was Steno who, two hundred and thirty years ago, laid the ground principles and pointed out the distinction between rocks which contained organic remains and those which contained none. Only a few years later, when the churches all held it to be impious to hold that there was any plan to the rocks, an English doctor of medicine brought forward the startling proposal that a colored geologic map of England should be made. It was our Doctor Hooke, who, in 1780, made clear the geologic results of elevation of the bed of the sea by movements not miraculous. Sixty years before this, Vallisneri, a student of Malpighi, had composed a noble treatise on the new science. There was our splendid, modest Doctor Daubenton, "the eyes of Buffon," who, about this time, overthrew the monkish doctrines that certain great tertiary fossil bones found in France were the bones of giants alluded to in the Scriptures. Werner, of Germany, who was not a doctor, more than a century ago (plainly endeavoring to save the Noachian deluge to science) pro-

pounded a theory of the formation of the oldest rocks by water; but our Doctor James Hutton, of Scotland, stood for truth and certainty, and showed not only that the oldest rocks were igneous in their character, but he actually made igneous rocks by great heat and pressure, whereupon the air became black with sermons again. And no list of the fathers of geology is complete without the name of the French doctor, Guettard, who, while making great discoveries, incidentally laid the foundation of the pottery manufacture in France, and showed the people that geology was a science with practical bearings. And there are great names connected with the study of fossils which I repeat to you almost reverently, the names of five great doctors of medicine—Lamarck, whom we regard as the forerunner of Darwin, Sir Everard Home, Bichat, Daubeny and Agassiz. As for the mineralogical side of geology, all must admit that from Avicenna, who eight hundred years ago made the very first recorded attempt at a classification of minerals, there was no mineralogy of note which was not worked out by doctors of medicine. I name only Avicenna, Von Bremel, a pupil of Boerhaave, Haenckel, the immortal Doctor Linn, whom we know so well in botany as Linnæus, Fuchs and his pupil Mitscherlich, and last of all, Doctor Wollaston, who gave the goniometer with which all mineralogists measure the angles of crystals.

I have mentioned Linnæus, and his great name reminds me that while he was the greatest he was not the only great doctor of medicine who developed the science of botany. Call the roll. Here are Cæsalpinus, who made the very first classification, Brunfels, Camerarius, Tournefort, Boerhaave, DeCandolle, Schleiden and Swan, and Jussieu. And if you run down the list of plants, you will find by the names of the first describer attached, that the hard work of botany in field

and forest has also been done by doctors of medicine, and right proud am I to place near the head of this group our own Daniel Drake.

In the widest fields of biology we find that the doctors have brought order out of chaos. I again invoke the great name of Aristotle, and following with the name of Paré, I stir your imagination and your pride by the mention of Pallas, Oken, Haller, Ehrenberg, John Hunter, Owen, Huxley, Forbes, Leidy, and mightiest of all, Darwin. The list to be complete, needs that I should again call the great names of Lamarck, Linnæus and Agassiz.

In the field of psychology, which I regard as a branch of biology, the doctors of medicine have warned off the theologians with their prepossessions and the metaphysicians with their intuitions and introspections and cock-sure deductions. We have shown psychology to be an experimental science, and have made it a doctor's science in very truth.

If this is an age of electricity, thank Doctors Galvani, Wollaston, Hare and Oersted for laying down ground-principles.

The grand generalization that force is molecular motion, and that forces are convertible and indestructible, was crudely dreamed by some Greek doctor, I warrant, for it was known after some fashion to Aristotle. Much more plainly it was set forth by good Dr. Galileo, and then through the progress of the years it was developed by Hooke, Papin, Young, Black, Oken, Mohr, Mayer, Carpenter, Helmholtz, Liebig and Seebeck, all doctors of medicine. Who else? No one else, if we except Grove the lawyer, who summed up what had been done, and Joule, the brewer, who determined the mechanical value of a given unit of heat by costly and ingenious experiment. With the exception of these two men the principle that force is molecular motion, and the allied prin-

ciples of the correlation and conservation of force, have been worked out by doctors of medicine. What other fraternity can boast of introducing so much of certainty into man's thought and life?

And turning to chemistry—which we cannot now separate from molecular physics—to chemistry, the most certain of all sciences, we observe that it was a doctor of medicine, Sylvius, who first clearly set forth the poetic and profitable conception of chemical affinity, and, as early as 1718 Geoffroy, another physician published tables of chemical affinities. Working on another line, Cardanus noticed the increase of weight in bodies which rusted in the air, Becher and Stahl followed with similar observations. Van Helmont came to a proper conception of the nature of a gas, Black found fixed air in the carbonates of the alkalies. These were all doctors of medicine, and they had perfectly prepared the way for Priestley and Lavoisier to discover oxygen and to comprehend the nature of oxidation.

Certainty! Yea, verily, the doctors of medicine have not only developed all the sciences but they have penetrated the uttermost corners of the earth; our profession has been represented in Africa by Dr. Livingstone and Emin Pasha, and near the pole by Doctors Kane and Hayes, and shoals of explorers over all the world.

It was Doctor Myer who first showed that the weather was the result of far-away causes, produced not by local influences nor by the wrath or approbation of the All-father. When people speak of "Old Probabilities," they render unconscious homage to our profession, which, upon the scientific collation of facts, evolves laws and makes predictions.

I protest, then, that there is no room for your orator to doubt that ours is an eminently scientific profession; and I here breathe a fervent wish and a hearty belief that, in spite of recent lapses which I have endeavored

to point out to you, ours may continue to be characterized by an insatiate desire to accumulate facts, a power of orderly collation, a poetic invention of hypotheses, a rigid testing of each hypothesis to the intent that truth may be evolved.

At this sitting our Society mourns the loss of two of its most eminent members, Scott, of Cleveland, and Comegys, of Cincinnati. I know of one, and I hear of the other, as a man of integrity, self-poised, modest, learned in and out of our profession. I suspect that they were as far asunder as the poles in many regards; one was bold, positive, fearless, swift to meet peril halfway, masterful in the stress of emergencies, patient and enduring when stubbornness could win. The other was a physician of perhaps gentler metal, who approached each case of internal disease as if it were a problem submitted to the wit of man for the first time since the world began. I have seen him spend much time in the careful study of a pauper's case, and do this over and over, day after day, not permitting himself or his students to make anything more than a tentative diagnosis until at least one hypothesis was demonstrated absolute truth. Then, at last, came a proud day of certainty when the physician of Cincinnati had, by observation and exclusion, led his class to certainty. God send us more men like these! While you give honor to their names and their memories, I beg that you will honor also that which they had in common—their clear and exact knowledge, and their instant challenge of all that was not clear and exact. It is the fervent wish of your orator that they may have many successors in the noble cities which they adorned, and in the State at large, and that the credulous marshmallow doctor may be crowded out by the typical doctor who doubts, and labors to attain certainty beyond doubt.

ADDRESS IN MEDICINE.

THE NEUROSES OF THE STOMACH, WITH SOME GENERAL REMARKS ON RECENT STUDIES IN GASTRIC DIGESTION.

JAMES T. WHITTAKER, M. D., CINCINNATI.

Professor of Theory and Practice of Medicine, Medical College of Ohio.

No organ in the body has received so much study in recent years as the stomach. In no other field of medicine have these studies been rewarded with richer result. Even the people have learned to recognize that dyspepsia is only a symptom of many different diseases. So far as the stomach itself is concerned, light has been shed upon it from so many sources as to enable the physician easily to decide between cancer, ulcer, and simple catarrh. At least the difficulty in diagnosis pertains only to the earliest periods, where it may be still, however, very great. But the acquisition of knowledge regarding disease of the stomach is nowhere better illustrated than in the ability of the physician to distinguish these diseases early enough for a more successful therapy. This statement applies even to the most malignant of the affections; to wit, to cancer, where an early diagnosis may

secure the timely extirpation of diseased tissue, or at least lead to operative procedure which, while it may not save life, relieves the patient of suffering.

Cancer, ulcer and catarrh—these are the diseases which form the sum of knowledge of most of us. We are satisfied if we can narrow down the diagnosis to one or other of these affections. A good many of us think to pay enough tribute to modern medicine and experience an entire self-satisfaction in the belief that all other affections are like dyspepsia, merely symptoms of one or other of these diseases.

The various recent studies have opened up, however, entirely new fields of knowledge, and have shown the existence of other conditions which arise entirely independent of cancer, ulcer, and often even of catarrh, or which may be, indeed, under long neglect the cause of these affections.

Attempt is often made to draw the line between organic and functional disease. We are aware, of course, of the fact that every disturbance in function implies organic change, and that the difference is merely one of degree. By functional is meant a disturbance in action without lesion of substance. We mean, of course, without demonstrable lesion, for it is impossible to conceive of disturbance in action without at least molecular change. This change, if sufficiently severe or protracted, becomes substantial. So that, as all organic disease is functional only at the start, all functional disease becomes organic in time.

The new era in the study of stomach disease was introduced with the discovery and use of the soft stomach-tube. The hard tube with pump attachment had been used from time immemorial, especially in the process of washing out the stomach after poisoning. It was Kussmaul who first used the stomach-tube in the treatment of dilatation and stagnation, in 1869, and it is interest-

ing to know that the greatest contribution to diagnosis, the discovery of the absence of hydrochloric acid in the gastric juice in cancer, was made in Kussmaul's clinic by von der Velden, ten years later, in 1879. Before this time, however, Riegel and Leube had simplified the sound and utilized it in the study not only of the gastric juice but of the various chemical changes which take place in the stomach. We owe all our great advances in the study of diseases of the stomach to this simple rubber tube. What the stethoscope was to diseases of the heart and lungs, the stomach-tube was in diseases of the stomach. But while the stethoscope served the purpose only of concentrating attention upon these organs, and could be at times entirely dispensed with, the stomach-tube remained indispensable in diagnosis, and became the most useful factor in the treatment of these diseases. The gastric juice was with it made accessible, and as materials could be withdrawn from the stomach from time to time, the whole process of digestion could be studied in its various stages.

I take pains to dwell upon the value of the stomach-tube because of the tendency in our times to decry the value of it. I repeat again, that the stomach-tube is indispensable in both diagnosis and treatment; and I may add that I have never seen any harm result from the almost daily use of it in hospital and private practice for fully a quarter of a century.

So soon as the gastric contents were made accessible, all attention was concentrated upon them; and with the simplification of the means of determining the presence or absence of the hydrochloric acid, it was thought that the key had been finally found to the diagnosis of the various diseases of the stomach. Hereupon the chemists pursued the acid to the last degree, in the effort to determine exactly how much existed in the stomach in health and in disease, how much was free, how much

combined, and how much of the acidity depended upon other kinds of acid. In these studies there was much statement and counter statement, so that it seemed for a time as if all knowledge upon the subject had become chaotic. High authorities differed as to the amount of acid natural to the gastric juice. The simplest of all statements, that the gastric juice is present only during the period of digestion, which seemed to have been established beyond all doubt by the early observations of Beaumont in the case of Alexis St. Martin, was called in question. Nearly all investigators support the old view, but a few later observers, among others Schreiber, maintain that secretion continues in an empty stomach. Fleisher found in warm water withdrawn from the empty stomach no trace of free HCl under the most critical test, and believes that the quantities of acid sometimes found, excited by relics of the last meal which have been secreted in the folds of the mucous membrane or by saliva which has been swallowed.

The statement that free hydrochloric acid was absent in cancer, was found to have many exceptions. Cases were reported in which the acid was present, and cases of absence of it in diseases other than cancer.

Regarding other acids, it is asserted on the one hand that lactic acid is present during the beginning of digestion and disappears later in the process of it. Again, it is maintained that the presence of lactic acid is a sure indication of the presence of cancer. Uffelmann furnished a simple test for the detection of lactic acid, which Penzoldt declares is of no value in determining the existence of cancer. Hereupon Boas, who first noticed the presence of lactic acid in cancer, supplied a complicated test which will always detect the slightest amount, and insisted upon the value of his original statement.

These contradictory statements introduce confusion and bring discredit upon the whole means of investigation. "What does it all amount to, anyhow?" said one of my fellow physicians to me the other day, in derision of the refinements in the study of the gastric juice.

The stomach has to do with four functions, motion, secretion, digestion, and absorption. The second of these functions, secretion, has hitherto received the most attention. The important elements in secretion are the pepsin and hydrochloric acid. Of these two ingredients the pepsin got all the attention in former times. In fact, the effective acid was only discovered to be hydrochloric acid by Bidder as late as 1852. I can remember myself when it was gravely disputed as late as a quarter of a century ago, whether the most effective acid was hydrochloric acid or lactic acid, and the conclusion was arrived at by the best physiologists that it made not much difference which of various acids was present, so that the stomach juice was sufficiently acid. Now we know, however, that it makes a tremendous difference whether the acidity be due to hydrochloric acid or to lactic, or, further, to organic or fatty acids.

Since the discovery of the absence of free hydrochloric acid in cancer, all attention has been concentrated upon this particular acid. It is agreed on all sides that the gastric juice should contain hydrochloric acid in proportion of at least one part to one thousand; in fact, the natural proportion varies between 0.1 and 0.2 per cent. Anything below 0.1 is subacidity and anything above 0.2 is hyperacidity.

The fact that the stomach juice or the stomach contents are acid, may be ascertained by a simple piece of litmus paper; but this test is of no value, because it is necessary to know the nature of the acid. Hydrochloric acid begins to be secreted at once, but at first in such small quantities as to enter into combination with the

ingested matter. It is only at the end of half an hour that the hydrochloric acid begins to be free, that is, to be secreted in excess of the ingested matter. By the end of an hour it reaches its maximum, and persists at this grade for an hour or two, when it gradually diminishes in amount.

But that the free HCl in the height of digestion amounts always, as is usually taught in the books, to 0.15-0.25, is not invariably true. Not infrequently the amount is as little as 0.05 per cent. On the other hand, Rosenbach declares that there is no final limitation as to the hyperacidity of the stomach. It is always relative and individual. Not every excess is a sign of primary disease of the stomach. Sometimes the excess is a compensatory activity of the stomach in intestinal disease. Sometimes the cause of the disturbance does not consist in a great secretion of HCl, but in the too rapid development of other acids out of the food, as fatty, lactic, acetic acids.

One of the most interesting revelations of modern study is the discovery of the immense quantities of HCl necessary to digestion. According to Honigmann and v. Noorden one part by weight of HCl digests only eighteen parts by weight albumen. 100 drops dilute hydrochloric acid, containing only 0.8 (7½ drops) HCl, would suffice to digest at most 15 grams (less than four drachms) of albumen. In cases of subacidity the administration of large quantities does not restore the natural acidity, and where the natural acidity increases after the use of HCl, this increase may by no means be attributed simply to the HCl, but is also largely due to other coincident treatment, diet, and other means. Often the use of fifteen to twenty drops every half-hour to one hour does not greatly increase the natural HCl. The ordinary dose of six to eight drops of officinal acid contains about one drop of HCl. This amount helps to

suppress fermentation and decomposition, but only in light degree, and certain fermentations, for instance the yeast fermentation, continue in spite of the abundant presence of HCl.

Gillespie finds the following stages in normal digestion: (1) No free, only organically bound HCl, increasing total acidity. (2) Free HCl, increasing total acidity. (3) Free HCl, decreasing total acidity. The occurrence of free HCl depends upon the condition of the food and of the mucosa, and shows itself in one-half to two and three hours. In the beginning of the first stage the HCl is so little that the saliva swallowed may still be active for a time. The organically bound HCl acts more as a weak antiseptic than the free HCl. The dissolved albumen diminishes during the digestion. Albumen increases regularly, albuminose remains uniform, peptones decrease rapidly. The micro-organisms present in great numbers at the beginning of digestion, become gradually scantier.

Penzoldt arrives at the conclusion regarding the period of the occurrence of free hydrochloric acid, that in health it depends upon the quality and quantity of food. Free hydrochloric acid shows itself later when the food is more abundant in albumen and ash. Some albumin foods excite the secretion sooner than others. (1) The addition of moderate quantities of fluid, 200 c.c., hastens the occurrence of the free acid. The duration of the distinct existence of the reaction is greater in small quantities of food poor in albumen than in large quantities of food rich in albumen. The best test is made, one hour after the ingestion of these things, with white bread 70 grams, and water 200 c.c. (2) Dissolved albuminoids are found in but small quantities during digestion, as they are immediately absorbed. (3) Peptonization begins with the dissolution of albuminoids. (4) Sugar is found only immediately after the ingestion of carbohydrates. Sugar

is absorbed quicker than anything else except alcohol. Water is not absorbed from the stomach at all.

In order to estimate the acid it is necessary to get the gastric juice.

In the introduction of the sound the tube should be carried to the pharynx, and the patient should make an effort to swallow. It is not necessary to put the finger in the mouth. A mandrin is also not necessary. During the introduction of the sound the patient may take a long breath. Sounds of medium size are preferred. A sound too small may double up; thicker sounds have more resistance and are easier introduced. The contents are best withdrawn into a wash-bottle. The empty bottle of the Potain apparatus is useful. But I use this common wide-mouth bottle with two tubes in the cork, drawing the contents of the stomach out by aspiration. If nothing follows aspiration, a little water should be poured into the funnel. The discharge of fluid through the sound may sometimes be favored by the acts of coughing and hawking. To determine whether all the fluid introduced has been discharged, it is well to use a large funnel and collect it in the funnel by upturning it as it flows. The use of the bulb on the tube may remove an obstruction. The best water for cleansing is boiled water or any mineral water, especially Carlsbad. The water may be medicated with sodium bicarbonate, or salicylate, boric acid, etc. Cleanliness is essential. Carcinoma and syphilis require separate tubes. Each man should have his own tube. A big glass funnel is best. Some patients say they can't breathe. They are advised to take a deep breath. Cyanosis sometimes occurs because patients will hold the breath. Leube reported the case of a woman aged sixty, who with the aid of a clumsy assistant, a barber's boy, swallowed the whole tube. It was afterwards ejected by vomiting.

Contraindications are advanced disease of the lungs or heart, aneurism, erosion, as in poisoning by alkalies and acids. Caution must be used in ulcer and in cancer, and in any tendency to hemorrhage from the brain, the stomach, or lungs.

In children it will suffice to use a soft sound twice as long as the distance from the stomach to the teeth. In babies the small tube may be used in the dorsal position, as when the sound reaches the stomach this organ contracts by reflex action and empties itself without siphonage.

The test meal consists of one or two biscuit and two cups of water or tea with milk or sugar (Ewald and Boas), or a dinner of soup, beefsteak, biscuit, one quart of water (Riegel). The patient is requested to masticate thoroughly. The fluid is withdrawn one hour after the breakfast or four or five hours after the dinner, at a time when the HCl is most abundant, preferably, as stated, by aspiration.

The best tests for free HCl are Congo red and phloroglucin.

Congo red (Hösslin, 1886,) is a benzidin coloring matter, whose red color is changed to blue under the action of free acids. It is a sharp and exceedingly simple agent. It shows no reaction with the HCl combined with organic bases or albuminoids. Large quantities of free organic acids may also make Congo paper blue, but these acids do not occur in the stomach in such large quantities. Congo paper has the advantage of simplicity. It needs no apparatus, no heat, only these strips of beautifully colored paper, which may be applied to the filtered or unfiltered juice, or even to the end of the stomach-tube. It is only the most exceptional case which would show such large quantities of lactic acid as to make Congo paper blue, and such a case would reveal itself to both the sense of sight and

smell. As you see, a dark blue spot, which forms instantly with this gastric juice, indicates HCl in quantity at least of 0.05-0.1. If the color remains red, free HCl is practically absent.

Phloroglucin vanillin (Günzburg), vanillin 1, phloroglucin 2, absolute alcohol 30. The presence of free HCl 0.01 per cent. shows a bright red color. I let fall two drops of the filtered juice with an equal quantity of the Günzburg agent, into this white porcelain cover, and hold the vessel over the flame while the surface is constantly blown upon with the mouth to secure slow evaporation. The presence of free HCl is shown by the occurrence, at first at the periphery, afterwards in the center, of a beautiful carmine red. The test is negative under a brown red color. This reagent is the most reliable and the most sensitive, but a decided reaction to either Congo paper or phloroglucin vanillin shows a sufficiency of free HCl.

The quantitative test is made by phenol phthalëin, 1 per cent. alcoholic solution, an acid which has the property of assuming a red color at the moment of the occurrence of a feeble alkaline reaction. To 10 (5) c.c. filtered stomach juice there is added in a glass a few drops of alcoholic phenol phthalëin solution, and to this mixture is added by means of a graded burette, drop by drop, 0.1 normal liquor soda, until, as you see, a faint rose-color is observed. Hereupon the number of c.c. of the fluid is read off and multiplied by 10 (20). Ten c.c. stomach juice (in the height of digestion) requires normally 4-6.5 c.c. liquor soda solution for neutralization, corresponding to a percentage of 0.14 to 0.24 per cent. HCl, disregarding the lactic acid and other acids. Other numbers are pathological.

Töpfer speaks of the various quantitative tests for the clinician. He advises three things, phenol phthalëin for the total acidity, alizarin (sodium alizarin, sulphurous

acid), to determine the loosely combined HCl connected with albuminoid bodies, and dimethyl-amidoazobenzol to denote the actual free HCl. This latter coloring matter approximates phloroglucin vanillin in sensitiveness. A minimum of free HCl changes its yellow to red. Hoppe-Seyler says that the qualitative demonstration of HCl in the stomach contents is easy, but the quantitative is very difficult for the practitioner. The method recently given by Töpfer facilitates the quantitative study very much.

Schüle concludes with Ewald, Honigmann, v. Noorden, that for clinical purposes the determination of the total acidity is unnecessary and that of the free HCl suffices. This may be determined simply by the phloroglucin vanillin, Congo red, and tropäolin. These are the tests I use, with that for lactic acid.

Lactic acid, Uffelmann test, freshly prepared, as I now make it, consists of pure carbolic acid 3 drops, liquor ferri sesquichlorati 3 drops, water 20 c.c. Equal quantities of this fluid are mixed with filtered stomach juice. The striking of a brownish yellow color indicates the presence of more than 0.01 per cent. lactic acid. Simple decoloration is not to be referred to lactic acid.

Boas has repeatedly called attention to the lactic acid, and his latest works demonstrate the value of it in the diagnosis of cancer. But the Uffelmann reagent is not absolutely reliable. It may fail even when there are considerable quantities of lactic acid present. Phosphoric acid, HCl, fatty acids, alcohol, grape sugar, and, according to Kelling, carbonic acid and the potassium cyanide of the swallowed saliva, may disturb the reaction. Boas gives a method by which the lactic acid is decomposed into acetaldehyde and formic acid. For the aldehydes we have a number of reliable tests. As our usual breads, without exception, contain lactic acid, this article of food must be abstained from in the test meal,

and the patient should take nothing more than a half to one pint of thin oatmeal gruel with salt. Boas examined a great many patients, sick and sound, with this method, and found lactic acid at no time. He found it absent also in atony, chronic gastritis, dilatation in consequence of cicatricial contraction of the pylorus, or found it only in insignificant traces in the relics of former meals, but found it without exception in considerable quantity in cancer. Boas is not able to give a satisfactory explanation, but finds the presence of lactic acid as a reliable early sign in the diagnosis of cancer of the stomach.

Strauss, at the instigation of Ewald, examined one hundred patients in reference to lactic acid and gas formation in the stomach, also with reference to lactic acid in cancer. The result was that in the large majority of cases of cancer lactic acid is demonstrable, and that it may be demonstrated by Uffelmann's test in cancer with rare exceptions. Moreover, that on the other hand it is only very rarely that lactic acid may be found in the absence of cancer but in the presence of a great reduction of the motor and chemical activity of the stomach. So long as free HCl is present in a great amount, lactic acid fermentation does not take place. It is needless to state that a test meal should under physiological circumstances show the presence of free HCl and an absence of lactic acid.

Digestion is demonstrated by the microscopic examination of the contents of the stomach, withdrawn from time to time.

Test of Pepsin.—Two beakers contain each ten c.c. filtered stomach juice; to one is added two drops HCl. A small cube of albumen is put into each of the two glasses, and they are both kept at a temperature of 98° to 104° F. In the course of two hours the cubes are markedly attacked where the HCl and pepsin are normal.

Of the two tubes the cube is attacked most in the tube containing the extra HCl. In the absence of pepsin neither of the two tubes is markedly attacked.

Absorption Tests.—Potassium iodide 0.2 g. (3 gr.) in gelatine capsule is swallowed, and the sputum and urine are examined every two to three minutes. The reaction of iodine is shown normal in the course of ten to fifteen minutes.

The sputum or urine is diluted one-half with water; to the solution are added a few drops of smoking nitric acid and a few c.c. chloroform. The solution is now actively shaken. The chloroform takes up the iodine to assume a reddish-violet color. I have not found either of these tests reliable.

I come now to the consideration of motility, the true importance of which has been recognized only in most recent times.

As a rule, motor, secretory and absorptive functions go hand in hand, but sometimes one is impaired and not the other. Motility is not simply a question of expelling the contents of the stomach into the intestine, but also of moving about the ingested matter to expose it to the action of the gastric juice. The stay of food in the stomach varies. In the experiments of Hirsch with the dog, it was found that the stomach empties itself in intervals varying from a quarter of a minute to several minutes, depending largely upon the capability of fluidification. The degree of acidity has an influence on the motor capacity. Too much HCl may produce a spasmodic contraction of the pylorus. Fluids leave the stomach quicker than solids. The empty stomach absorbs no water. On the other hand, it absorbs alcohol in high degree, sugar in watery solution in moderate degree, in alcoholic solution in greater degree. Water is abundantly excreted into the stomach when there is no HCl in the stomach. It is well known that patients

with pronounced dilatation in consequence of stenosis suffer with thirst, oliguria, constipation, and dry skin. It was formerly thought that this was from lack of absorption, but the experiments of v. Mering have shown that the stomach absorbs no water to speak of, but does absorb nutritious matter and that waters excreted in the stomach take the place of it. So it may happen that in stenosis of the pylorus more fluid may be found in the stomach than has been taken. This excretion of water into the stomach contributes to favor stagnation. Von Moritz found also in dogs that water introduced into the stomach was ejected saltatim from the stomach. Rhythmic contractions, three in the minute, empty the stomach. The movements of the stomach propel the food to the pylorus. Here fluid, especially water, is quickly emptied under sudden pressure at intervals into the duodenum. Next, mushy substances are discharged, and solids only after a longer time. Hence the advisability of fluid nutrition in stomach diseases (Riegel).

This study brings us directly to the consideration of the

NEUROSES OF THE STOMACH.

For a long time the question of greatest interest in the study of disease of the heart was the condition of the valves. After the brilliant discoveries of Laennec, attention was concentrated upon these structures, and questions of insufficiency and regurgitation were studied to the utmost degree of refinement. At the present time it is seen, however, that the competency of the heart, which is the main thing, does not depend upon the condition of the valves, but is wholly determined by the state of the muscle fibre. Heart strength and heart failure are not questions of valve disease but of the strength of the muscle walls.

So it is in the stomach. The rôles which the stomach plays in secretion, digestion and absorption are really entirely secondary to that of motion. The stomach is a great disinfecting reservoir, into which enormous quantities of fluid are turned for the purpose chiefly of fitting the contents of the stomach for intestinal digestion. The main business of the stomach is to put its contents in such condition as to be able to discharge them into the intestine, and the main evils of disease of the stomach rest upon inability to effect this discharge. For instance, the worst disease of the stomach, we might say of the body, is cancer. But cancer does no particular damage; it often lies latent, at least for a long time, unless it be situated at the pylorus, where, unfortunately, it usually is situated, so that the escape of food from the stomach is blocked. And all the main evils of cancer, pain, the decomposition of food, the starvation, are obviated by making a new opening into the intestine. Chronic gastritis, developing gradually, may reach a considerable degree without much sign. But signs set in at once when the motor power of the stomach is impaired. It is upon the motor power that the course of the whole condition depends, and the support of it is of the first importance in treatment.

The best method of testing motility is Leube's, by a test meal of soup, beefsteak, white bread, which should disappear in health in seven hours. The stomach should then be found empty. In Klemperer's oil method, 100 grams olive-oil are introduced into the empty stomach; contents withdrawn in two hours, deficit measured; 70 to 80 grams should be discharged in this time into the intestine; less, of course, under disturbed motility. In Ewald and Sievers' salol method, capsules of 15 grains show reaction of salicylic acid in the urine under the addition of the neutral chloride of iron solution, which gives it a violet color, at the earliest in half an

hour, at the latest in an hour and a quarter. Retardation or reaction shows disturbed motility. None of these methods compare with that of Leube.

. The stomach should empty itself in a given time. Failure to do this shows a mechanical insufficiency. Test is made by the examination of a test meal. All other methods are impractical or inexact. A meal in the evening at 8:00 o'clock, consisting of cold meat, white bread and butter and a cup of tea, should be entirely expelled from the stomach during the night. Where the stomach is insufficient, residua are found in the morning with products of fermentation. The test meal should be ingested without consciousness of examination. With any disturbance in the motility of the stomach there occurs dyspepsia, which shows itself in a feeling of heat, formation of acid, cramp, vomiting, development of gas, eructation, putrid odor, feeling of fullness, delay in digestion. So, Bourget believes that the mechanical activity of the stomach is of greater importance than the chemical.

Sometimes the stomach muscle undergoes hypertrophy. This condition is especially seen in the region of the pylorus, where it may contribute to the development of spasm or to the formation of the so-called benign stenosis. Ordinarily the mucous membrane of the stomach is thrown by muscular action into fine folds, in some places convoluted. In this connection, Mikulicz was able to develop in the diagnosis of carcinoma of the pylorus a new symptom distinctly plain under the gastroscope. The pylorus of a healthy man shows under the gastroscope as a long split, or as a triangular, oval, sometimes a round opening, which is always surrounded by a circle of thick red folds of mucous membrane in active motion. These convolutions and folds in the pylorus were entirely absent or showed only feeble foldings in cancer of the stomach. Mikulicz saw in cancer

perfectly smooth walls about the pylorus, produced by the carcinomatous infiltration which had converted the pylorus into a rigid tube.

The consequence of muscular insufficiency is atony, with dilatation and dislocation. Sometimes the conditions coincide. Usually, however, they are separate, and we have to deal with a gastrectasia or a gastroptosis.

The influence of the nervous system upon the stomach has long been recognized in the dyspepsia which is produced by the emotions, by anger, fright, especially by anxiety and grief. Eructations, vomiting, attacks of gastralgia, may be precipitated in this way. Most hypochondriacs are dyspeptic, and few hysterical patients have sound stomachs.

Perhaps the best direct illustration of the influence of the nervous system is offered in the gastric crises of tabes dorsalis. I have at the present time under treatment at the hospital a patient who in the midst of apparent health is seized with cramp colic and cholera morbus of such intensity as to produce dangerous collapse. In this patient the cause of the condition was easily recognized by the distinctive signs of locomotor ataxia, but Werner reported a case in which the gastric crises occurred in the earliest stages of tabes and remained unrecognized for a long time.

Reflex neuroses are best shown in the pains in the stomach which occur in the course of gall-stone and kidney stone colic, in dysmenorrhea and diseases of the ovaries, especially in gravidity, and most especially in the hyperemesis gravidarum.

The neuroses of the stomach include the affections of the motor, secretory and the sensitive nerves, the last manifested in Anorexia, or loss of appetite, which is the most common condition; in Parorexia, the desire for all kinds of unusual or disgusting things, chalk, slate-pencils, dirt, as manifested especially in the freaks of preg-

nancy and the developmental period of menstruation; in Akoria, or loss of the sense of satiety, which is usually found in connection with neurasthenia or hysteria; in Bulimia and Polyphagia, ravenous hunger—bulimia being the term used to express the paroxysmal condition which occurs in connection with neurasthenia and hysteria, sometimes in tapeworm, tuberculosis and diabetes, while polyphagia is the continuous enormous appetite which is unattended with any feeling of weakness.

Gastralgokenosis, pain in the stomach when empty, a very common condition, is sometimes seen in nervous states, sometimes in connection with ulcer, tapeworm, disease of the genital organs.

Neuroses of Secretion are manifested especially in Hyperacidity, which occurs in connection with neurasthenic states and in ulcer of the stomach, in Heartburn, which is marked commonly by a regurgitation of acid contents, and is easily overcome by the alkalies, especially by sodium and magnesia.

HYPERACIDITY.

Neurotic patients suffer with hyperacidity, a condition which was found by Jolly in hysteria, and by v. Noorden in melancholy. The poorer classes seldom suffer. The relation to cholelithiasis and nephrolithiasis has long been recognized, as well as the fact that the hyperacidity ceases with the discharge of the stone in either case. Whether the hyperacidity stands to ulcer in the relation of cause to effect is not yet established.

The prominent symptoms are distress, usually of burning character, in the region of the stomach, attended with spasmodic contraction at the pylorus, with nausea, acid eructation and heartburn, which Sticker characterized as the pyrosis hydrochlorica.

The stomach is not distended, but the epigastrium is sensitive to pressure. There is no increase in the secretion of mucus, a fact which distinguishes hyperacidity from gastric catarrh. The motor action of the stomach is not essentially disturbed.

Hyperacidity of the stomach runs from 0.3 to 0.6 per cent., requiring 80 to 120 c.c. soda lye to neutralize the excess. I have at the present time under study the case of an old man who was sent with the diagnosis of cancer, but who shows hyperacidity to such degree that the filtered stomach juice actually smokes in the sunlight. The digestion of albumen is rapid, but the digestion of starch is disturbed, as the ptyaline of the saliva is too quickly neutralized. The matter withdrawn from the stomach in three to four hours shows perhaps no trace of muscle fibre or fragment of albumen, but much undigested starch. The thirst is attributed to the spasmodic contraction of the pylorus, which retains the water in the stomach and prevents its discharge in the intestine, where alone it may be absorbed.

The examination of the matter vomited or withdrawn in the morning from an empty stomach, shows always a number of cell nuclei of sharp contours, the residua of leucocytes which have migrated more abundantly than usual through the stomach vessels in consequence of the irritation of the mucous membrane.

The discharge of large quantities of acid matter into the intestine may excite undue peristalsis and lead to diarrhea.

The chief point of differentiation of hyperacidity concerns ulcer, which is so often associated, if it be not caused by the increased acid. The pain in ulcer is usually circumscribed to a point in the epigastrium, whence it may radiate, especially to a particular point, the so-called dorsal point at the side of the spine opposite the stomach. The pains in ulcer are manifest or

are increased by the ingestion of any kind of food. The maxim holds good in ulcer, "no food, no pain." The pain of hyperacidity is more diffuse, and is manifested or intensified only by the ingestion of starchy food. Large quantities of albuminoid food may be digested without pain. Pains which are relieved by emptying the stomach with the stomach-tube are usually due to

SUBACIDITY AND INACIDITY.

Subacidity and inacidity are conditions due to diminution or entire absence of hydrochloric acid in the gastric juice. These conditions are observed in all the grave infections, typhoid fever, in anemia, especially in pernicious anemia, and in serious diseases of the stomach, chronic gastritis, amyloid degeneration, carcinoma, etc. Subacidity and inacidity due to nervous influence are observed especially in neurasthenia, hysteria, and tabes dorsalis.

Long periods of subacidity or inacidity lead to degenerative changes, and inactive glands suffer atrophy.

A subvariety of this condition was described by Rossbach as a Gastroxynesis. In this state there is an intermittent hypersecretion attended with headache, distress in the stomach, sometimes with nausea, eructation, heartburn, and vomiting of acid matter.

The condition is especially observed in individuals who lead an intellectual life, especially after long-continued intellectual work or strain, and was ascribed by Rossbach to the influence of the nervous system upon the secretory fibres of the vagus. Rosenthal attributes the condition to an abnormal excitement of the vasomotors, which produce a temporary anemia of the central nervous system, with an irritation of the centers for the secretion of the gastric juice.

Reichman described a continuous form of secretion, and maintains that the continuous form is always, while the paroxysmal form is only occasionally, attended with hyperacidity.

Neuroses of motion are shown in abnormal peristalsis, which is especially seen in hypochondriasis; in eructation, with its subvarieties of aërophagy, air-swallowing, both conditions being dependent usually upon the swallowing of air; in rumination, which is the regurgitation of food into the mouth.

But the chief affections are, as stated, gastrectasia and gastroptosis. It must be remembered that some stomachs are abnormally large. These are the so-called cases of megalogastria. They are distinguished by the absence of all symptoms of distress.

DILATATION AND DISLOCATION.

Contraction of the pylorus leads to accumulation in the cavity of the stomach. This contraction may be congenital, or caused by tumors, ulcers or cicatrices; further, by benign hypertrophy, by chronic gastritis, or by spasmodic closure. But the most common cause is atony of the muscular walls, from weakness of the stomach musculature after exhausting diseases, typhoid fever, puerperal fever, diabetes, anemia, leucemia, from paresis of the nerves, in brain and spinal disease; also from chronic atony from unknown cause.

Chronic dilatation is marked by a feeling of weight and tension, with acid, gaseous or foul eructation, the vomiting of abundant offensive masses or relics of food, emaciation, constipation, and diminution of urine, which becomes neutral or alkaline with increased thirst. The objective symptoms depend upon the disturbance of function and upon the size of the stomach. It is found that the stomach contains food seven hours after eating,

and enormous quantities are often discharged. The insufficient motor power may be tested by the salol test of Ewald or the iodoform test of Fleisher. The delay of the reaction of iodine in the sputum in the iodide of potassium test, shows the delay in absorption. The size of the stomach is indicated in the distention of the abdomen, in the peristaltic movements, which may be seen in thin people, also in the succussion sound. The most important results are obtained by percussion, which shows the dullness of contents, or the tympanitic resonance of gas. Anything like a strip of dullness in the region of the umbilicus or below it, especially in standing, bending forwards, and more especially if it disappears in lying, is very suspicious. This strip may be brought out by drinking a half a pint of fluid and shown to belong to the stomach. It is best demonstrated in its appearance and disappearance by pouring in water through the sound and letting it escape again. If the lower border reaches below the umbilicus and the above-mentioned signs are present, there is surely a dilatation ; if it reaches to or near to the umbilicus the suspicion of dilation is justifiable (Riegel).

The position and size of the stomach may be brought out by the use of seltzer powders taken separately, in a little water, an even teaspoonful of carbonate of soda and tartaric acid. But the borders are more precisely made out by pouring in water and letting it escape.

Sometimes the gas which is developed escapes rapidly into the duodenum and invalidates conclusions. Then again too much carbonic acid gas will over-distend the stomach above its natural volume, so that the gas experiment and the fluid irrigation should be tried together. I have found inflation of the stomach with air after the method of Runeberg more satisfactory.

A simple and exceedingly effective method for determining the outlines of the stomach is furnished by the improved electric light.

The gastroscope was constructed by Liter, of Vienna, on the principle developed by Mikulicz on the basis of numerous experiments on the dead and living body. The gastroscope is, like the cystoscope, designed for the inspection of the interior of the organ. The technique is not yet sufficiently perfected for practical use. It is necessary to anesthetize the pharynx and esophagus with cocaine, and it is wise to use morphia subcutaneously in children and young persons. After the introduction of the instrument the stomach is filled with water, and as secretion begins under pressure, the head and neck must be so disposed as to permit the fluid to escape from the mouth. Hereupon the wall of the stomach is studied. This study requires a period of time at least twenty to twenty-five minutes under the most favorable opportunities. The results recorded by Mikulicz and Oser are rather sparing.

Gastrodiaphanoscopy belongs also among the latest acquisitions. Miot, in 1867, made experiments upon the cadaver of man and animals, and Lazarwicz, 1868, made similar observations. But the method was introduced into practice in 1889 by Einhorn, of New York, on living man. Einhorn's first experiments passed unobserved. Heryng and Reichmann now made numerous observations and found the method worthy of study. The apparatus consists of this soft sound, 12 mm. in diameter and 70 cm. long, with the lamp at the end. The light, for protection and avoidance of too great heat, is covered with a glass globe. The conductors are connected with a battery. In the use of the instrument it is only necessary to have the patient drink a glass of water. In using it, the stomach must be perfectly empty, and the tubes should be wet with water or glycerine. If the stomach is not empty it should be washed out. The operation is attended with no difficulty when the patient is ac-

customed to the sound. The light shows as a diffuse globe, usually in the left hypochondrium.

The diagnosis of dilatation or dislocation may not be determined with exactitude by the electric light, as the light may be diffused through the adjoining colon; but as a rule the position may be pretty accurately fixed in this way. I have at the present time under treatment two young ladies, in whom the diagnosis of gastroptosis was easily determined by use of the electric light, which showed the stomach in the left iliac region. This dislocation was confirmed by the inflation of the stomach with air by means of the Politzer bag. Strange to say, in one case the most prominent symptom is constipation, in the other diarrhea.

The degree of dilatation may be largely determined by the quantity of urine. A quantity of urine voided in twenty-four hours amounting to 1000–1500 c.c. (2½ to 4 pts.) or more, indicates dilatation of the first degree; a quantity of but 500–1000 c.c. (1¼ pts. to 2½ pts.) indicates dilatation of the second degree; and a quantity below 500 c.c. (1¼ pts.) indicates ectasia of extreme degree (Boas).

Dilatation due to stenosis is indicated by active peristaltic and antiperistaltic motions, with frequent and abundant discharge of the contents of the stomach.

For primary pyloric contractions speak: A history of hemorrhage or other sign of ulcer, palpable pylorus, grave emaciation with reduction of diuresis, obstinate constipation, visible peristalsis of the stomach, abundant vomiting, absence of escape of bile into the stomach. For malignant strictures speak tumor, cachexia, edema, absence of HCl, age.

Dilatation due to carcinoma is indicated by the sudden occurrence of dyspepsia, usually in the midst of apparent health. The patient is usually advanced in life. The hydrochloric acid is absent from the gastric juice,

lactic acid is present. The albumen and hemaglobin are reduced in the blood. Pain predominates. There is cachexia, and later edema about the ankles.

A good point in the diagnosis of neuroses is the recognition of the fact that the attacks are often entirely independent of ingestion of food, and are as apt, or rather more apt, to occur in the empty stomach. The coarse indigestible matters which intensely aggravate organic affections have little or no influence upon the neuroses. Finally, the remedies, especially the regulation of the diet, which are so influential in organic maladies, are without effect in the neuroses, while they in turn are favorably influenced by massage and electricity, remedies which have no effect upon organic affections.

TREATMENT.

I may make only a few general remarks on the subject of treatment.

In the treatment of hyperacidity in the regulation of the diet it should be remembered that starchy foods are injurious. Fats may be allowed, as in health; and as sugar is so easily absorbed, the bread or cereals which are given should be treated to double baking (*zwieback*, real biscuit), or toast, that is, bread in which a part of the starch has been dextrinized or partly converted into sugar. Water should be taken in but small quantities and the thirst allayed by the mineral waters, seltzer water, soda water, Apollinaris, which contain considerable quantity of carbonic acid gas, as carbonic acid gas stimulates the stomach and favors absorption. The food should be such as is easiest handled by the hydrochloric acid: sweet breads, calf brains, liver sausage, blood sausage, veal, ham, milk, etc.

The main principle in treatment is based upon the relief of the irritation of the secretory glands, therefore

all irritants are distinctly contraindicated; alcohol, tobacco, coffee, tea, highly spiced foods and fats should be abjured altogether. The diet should consist chiefly of milk, bread, and the lighter meats, oysters, chicken, fish, etc.

The pains of hyperacidity are best relieved by the alkalies and by the use of narcotics, especially of belladonna.

Fleisher reports a case in which the pains of hyperacidity were very light during the day, but were unendurable in the first hours of the night. It was found that if the supper had been taken at 7:00 o'clock the pains occurred regularly four hours later, between 11:00 and 12:00; whereas, if the supper was postponed until 9:00 o'clock, the pains occurred only between 1:00 and 2:00. Massage, galvanization, hot applications, were entirely without effect. The patient now found that the taking of a large cup of lukewarm milk at the first onset stopped the pains, or that they recurred only in the morning when the stomach was empty. It is a fact that these pains cease also after the ingestion of milk, eggs, or other albuminous food, and that they are alleviated by alkalies.

It was for a long time taught that the chief function of the hydrochloric acid was to arrest fermentation and decomposition. It would seem, therefore, that in arrest or absence of hydrochloric acid, decomposition should take place in the stomach contents. The fact is, however, the decomposition only sets in under stagnation, therefore in carcinoma, gastritis, ectasia, but not necessarily in subacidity and inacidity of purely nervous origin.

Hydrochloric acid as a remedy is recommended, therefore, not to substitute the defective acid, but to stimulate the secretory glands, excite peristalsis and inhibit decomposition.

Alkalies.—The bicarbonate of soda in no way influences the secretion of gastric juice, no matter when or how given. It may only affect the already secreted juice, which it may neutralize and make alkaline. It is indicated, therefore, in the presence of hyperacidity as manifest in heartburn, acid eructation, and pain. Therefore, an alkali should be given at the height of digestion, not before or during meals, but some time after. Alkalies have value in the treatment of ulcer, not directly, but upon the associate hyperacidity. The best alkali to neutralize HCl is magnesia usta, next is ammonio-magnesium phosphate. Magnesia usta is four times as strong as the bicarbonate of soda. Too much bicarbonate may develop CO_2. It is best to administer magnesia usta and bicarbonate in equal parts. The simple carbonate irritates too much and is less agreeable to taste. The dose should vary from one-half to one teaspoonful. Carlsbad salts are especially indicated in hyperacidity.

Carlsbad water is contraindicated in carcinoma, ectasia, atony, or in all dyspepsias in which HCl is reduced, so in most forms of nervous dyspepsia. Marienbath has twice as much glauber salts as Carlsbad, has much more common salt and more free CO_2. It is best indicated, therefore, in sluggish intestinal digestion.

Bitters are indicated only where the secretory activity of the stomach is diminished, and should be taken then one-half hour before eating. Wolff's experiments showed that the sulphate of strychnia increases HCl, and in cases in which HCl had been before constantly absent. This irritant effect of strychnia was sustained several days after the remedy was stopped. Skjeldemp and Duplay found that strychnia had also an exciting effect upon motor action. Friedreich got good results with condurango. Penzoldt recommended basic orexin, which is a phenyldihydrochinazolin.

Pepsin is seldom indicated. Where there is free HCl, there is also sufficient pepsin, and even in the absence of HCl there is still pepsin or pepsinogen. Cases in which pepsinogen is absent are very rare. The pepsin in the Pharmacopœia is of no value. There is a concentrated pepsin which is a better preparation. Pepsin wines are not to be recommended. According to Hugouenenq the addition of wine hinders the action of pepsin. Large quantities of pepsin wine, according to Werther, inhibit the action of gastric juice upon albuminoids. Papayotin and papain made from the juice of the carica papaya, a tropical plant, have the property of converting albuminoids into albuminose and peptones. Papain has the advantage over pepsin that it acts in alkaline and neutral fluids and has less digestive property than pepsin. It has much slower effect upon finely divided meat and egg albumen. Hirsch found, however, that papain would substitute pepsin in the absence of pepsin. Riegel was not able to confirm the brilliant results of various observers. Pancreatin is usually given in combination with carbonate of soda. Boas recommends equal parts, 7½ grains, in compressed tablets, two to four, a quarter of an hour before eating. The idea is to anticipate the action of the pancreas in the stomach, presupposing that the stomach contents are neutral or feebly acid; or that the gastric juice is neutralized by alkalies. The results are not yet sufficient in number to justify a conclusion. Ptyalin (Sticker) is supposed to continue the action of the saliva. It is given also in tablets with soda.

Electricity.—Ziemssen made the experiments on animals of exciting the gastric juice, and found that the cutaneous application of the galvanic current increased the secretion. Rossi repeated these experiments on dogs with fistula, and got the same positive results. Hoffmann found that while but a few drops of fluid of

neutral reaction was found in the stomach before the introduction of the current, real gastric juice was excreted soon afterwards. The secretion continued three minutes after the cessation of the current and then gradually ceased. Riegel applied one large electrode (anode) to the back, a second (cathode) to the stomach. He found that in health galvanization produced quite considerable quantities of gastric juice. Ewald and Sievers found that faradization of the abdominal walls with strong currents and broad electrodes had a decided influence upon the stomach. Einhorn found that faradization of the stomach itself through electrodes which had been swallowed gave the secretion a high degree of acidity through HCl.

Electricity is of most value in treatment of diseases of the stomach when the anode is introduced through the stomach-tube into the interior of the stomach, a glass of salt water, 0.6 per cent., having been previously ingested. The cathode is then stroked over the surface of the stomach.

Massage.—Zabhidowski found massage of value in atony and atonic ectasia. He was able to unload the stomach of relics of food and to overcome motor insufficiency. Sometimes it fails. It is best undertaken six hours after the chief meal. It should be done three to four minutes, later five to ten minutes, with the patient lying with legs flexed to relax the abdomen. The masseur seizes the left hypochondrium with the right hand and makes stroking movements from the fundus to the pylorus. In this operation the fingers are stretched and are opposed by the extended thumb. While the right hand is carried from the left to the right, the left hand exerts a gentle pressure, so that the stomach is seized between the two hands. In dislocations the motion must follow the position. These strokes alternate with kneading motions.

In the treatment of dislocation there is advantage in bandaging. Although certain patients can endure no pressure, attempt should be made in all cases. No one bandage answers for all forms. The pressure should be made from below upwards. This purpose is best subserved by a wedge-shaped bandage with the thick end of the wedge above the symphysis.

Sometimes it is wise to introduce all nutriment by the bowels.

In rectal nutrition it is found that eggs are quickly absorbed, but much quicker with the addition of common salt, and still quicker if peptonized and heated. Two eggs are acidified with 200 c. c., 0.15 HCl solution and 5.0 pepsin, kept warm in oven 10 hours at 40°C. Absorption is then twice as great. It has long been shown that materials injected into the rectum pass the ileocæcal valve and may appear in the stomach. Greutzer especially demonstrated this fact. Starch granules introduced in the physiological salt solution could be demonstrated in the stomach in man. The best rectal nutritive injection is made of milk, eggs, and starch. Thus 250 grams (about 6 oz.) milk, the yolks of two eggs, one end of case-knife of salt, teaspoonful of red wine, dessertspoonful of meal. The bowel should always be washed out one hour before. No more than a quarter of a pint should ever be introduced at once. The patient should remain quiet one hour after the introduction. If there is much irritation a few drops of tincture of opium should be introduced or a suppository. When irrigation, electricity, massage, help no longer, the distended stomach should be turned over to a surgeon, who should put it at its lowest portion in direct connection with the intestine.

Billroth first suggested and practiced pylorectomy in the treatment of cancer. Several years later Wölfler, a pu-

pil of Billroth's, devised the operation of gastro-enterostomy and performed it with success.

Bircher in cases of dilatation made long sutures enfolding tracts of the stomach in order to reduce dilatation, and a little later Loreta practiced digital divulsion. Neither of these operations have come into extensive use.

The remedy for all this, atony, dilatation, insufficiency, dislocation, is apparent enough. We must stop the abuse to which the stomach is subjected from the beginning to the end of life. No organ in the body is so continuously abused. There is fault in the cuisine; food is badly prepared. There is fault with the quantity; the sins of this age are the excesses of self-indulgence. There is fault with the time that is allotted to meals; the food is literally bolted, and the mind is distracted by the occupation of business and professional care. There is fault in the mastication, which is cut short without time for insalivation. These faults pertain especially to a new country, and our country has long had an unenviable reputation as a land of dyspepsia. It is superfluous to dwell upon this subject. Men suffer more than women because men are more impatient than women. A dog is for the most part an amiable animal, but a dog with a bone is a brute. The impatience of men at meal-time is a matter of much suffering to the other sex. I saw a statement in the paper the other day to the effect that a young man had shot his mother for the simple reason that she had not prepared his meal on time. Few men go so far as this, but many men, good at other times, become brutal at this time. So it is no wonder that the stomach under long abuse suffers atony, and that Hayem was able to say that in the examination of a great many stomachs, even from people who have died from acute diseases with sound

organs, he finds almost no adult with a perfectly healthy stomach. The stomach is from the beginning so badly treated that it shows always chronic reactive changes. For this reason it is that almost in no stomach is there a perfectly normal chemical digestion.

THE INFLUENCE OF HEREDITY.

A. B. Richardson, M. D., Columbus.

Like begets like. This is a simple proposition, and an axiom as old as the records of human thought. Volumes have been written on it and with reason, for it is a phenomenon vital in the perpetuation and development of the race. The thought of humanity is involuntarily given to the subject of its own future and the questions that arise in relation to its advance or retrogression.

It is doubtful whether much can be said that is new. Possibly a more forcible impression may be produced by putting the question in different form before us and sharply outlining some of its conclusions. It is introduced under the present circumstances because it is believed that the medical profession, particularly in the field of jurisprudence, has not duly considered the influence of this law of development. The medical profession has a large responsibility in this regard. It is the custodian of the welfare of the physical organism, and no part of this is more important than a study of the laws of its perpetuation and development. It must search out in all its ramifications the extent of this potent influence, pointing out wherein it may be utilized for humanity's good, and in what manner it should be disarmed if possible of its power for harm. Let us then briefly put the proposition before us.

It is universally recognized that certain laws of inheritance control the perpetuation of bodily structures,

that the physical features of parents are found in the child, that distinguishing and peculiar characteristics of bodily shape are prone to be perpetuated in the offspring, and that this extends to congenital defects or perversions. Six fingers to a hand or six toes to a foot, when found in a parent, will also be found more frequently in the progeny of such a parent than in the descendants of parentage not possessing such peculiarity. They tend to perpetuation. So also do the normal physical characteristics reappear in the child. Blue eyes and auburn hair, or dark hair and brown eyes, a high stature or a low stature, a deficient body-weight or an excessive avoirdupois, all these are perpetuated from generation to generation. Types of physical structure are thus handed down, and become fixed into racial and family characters. Defects in this manner become integral features of certain types. A flat chest, or a weak digestion, or a delicate and unstable nervous system, is thus transmitted. If the eyes are defective, the defects are prone to reappear in the child. A prominent modifying element in all cases is the relation of the two halves of the parentage to one another. These intensify or counteract such transmission in the degree to which they unite in the possession of similar characteristics or defects, or replace the feature or defect of the one with an opposite form or a healthy structure of the other. This is one source of variation, and one avenue of relief from unfavorable tendencies. Another is the tendency toward congenital variation that gives individuality to every child, the distinguishing character to every individual. It is fair to assume that the latter of these is due in large part to the modifying influence of nutrition and environment. These have an individuality and general tendency either upward or downward, according as the balance is on the credit or debit side of the vital ledger. Good food, comfortable clothing

and good hygienic surroundings in home and workshop strongly tend to overcome original defect and to conteract the tendency to its transmission ; while bad food, poverty and exposure, with bad hygienic surroundings, make more certain the transmission of any defect in the parent. Such influences add to or subtract from the natural bent of the bodily structure to hand down its like, but do not wholly remove it. In such terms, then, can the proposition be stated, and it is our province to investigate how far the effects can be traced.

All agree that we may include the mental faculties in the same category with bodily structure. "He is like his father," "he comes by it honestly," "she has the disposition of her mother," we often say, and truthfully, of children. We are continually seeing in our offspring the traits and mental characteristics of ourselves. If the parent is energetic and industrious, the child is likely to be so also. If he is excitable, irritable, or impulsive, we may look for the same traits in the child. If the parent is timid and yielding, afraid of responsibility and lacking in courage, the child will often be found to have the same traits. While education, favorable or unfavorable environment and nutritive conditions, all modify these tendencies, there is over all the continual outcropping of an inherited tendency that neither education nor environment can wholly eradicate. If the parent is intellectually bright, if he learns quickly, the child is very likely to show the same capacity ; while if the opposite is true, we may look for a corresponding defect in the child.

We need not stop here, however. What is true of the physical and mental characteristics is equally true of the purely moral qualities. Honesty and dishonesty, truthfulness or untruthfulness, morality or licentiousness, are not wholly the result of environment or education. It is true that these have much to do with the

perpetuation of moral traits or the modification of them, but it is equally true that dishonesty runs in families, that there is in some a natural tendency toward licentiousness that no education and no environment can wholly eradicate. Some men are virtually born criminals. Their parents were such before them, and they are so in spite of more favorable surroundings or influences that would tend to modify these traits. If the inherited tendency is strong enough, no other influence can overcome it. It may be due to a combination of criminal propensities in the two parents, reinforcing the evil tendencies of each, which have not been strong enough in either to cause habitually criminal conduct, but when united in the child cause tendencies that inevitably bear the fruit of crime.

We see examples of this all around us. There is the accidental criminal and the habitual criminal. The one may be fairly ascribed to the vitiating influence of unfavorable surroundings or bad education. The other is almost always the result either of inherited tendencies or of disease or defect. On the other hand, probity and honor, truthfulness and integrity, are traits that are inbred and handed down generation after generation in many families. There is in some a natural tendency toward law-abiding and noble conduct, and they resist temptation with far greater ease than many others. This is simply what we mean by the trite old proverb: "Blood will tell." It does tell, and tell not only in bodily structure and mental bias, but in moral characteristics and propensities. Now this much is conceded by most authorities. That physical peculiarities and bodily types, mental and moral characteristics, intellectual capacity or emotional development, tendencies to crime or the opposite, may be and usually are handed down from parent to child, is so well established by the experience of mankind that they accept it as a fact. It is only

when we come to consider the relations of these that we find divergent views, and to this feature we desire for a few moments to direct your attention.

Most people accept the view that the mind is a function of the brain, that all we know of mind activity and its disorder demonstrates that the brain is the organ through which it is made manifest. It is well established by the research of microscopists and pathologists that whenever the mind functions are disordered there is a corresponding disorder and disease of the brain. Not all diseases of the brain are accompanied by disorder of the mind, because only a part of the substance of the brain is the mind tissue, and disease may occur in other parts without damage to the mind, just as disease may occur in other organs of the body without mind disorder; but whenever there is disease of the mind tissue, the cells and fibres in the parts of the brain that are the basis of mind activity, then we always find corresponding disease of the mind. When one is disordered the other is diseased. Again, we find that when the mind is defective in development there is always a defective development in these tissues in the brain. The brain is often small, or it is deficient in those highly organized portions that are known to be the seat of the mental functions. If the one is defective, the other is also defective.

From such circumstances as these we are justified in concluding that there is some relationship between the two, that the type of structure of the brain must have some relationship to the mental characteristics, that variations in its structural arrangement are accompanied by variations in mind activities, and that a healthy and well-developed brain is essential to a healthy development of the mind. In other words, the mind is a function of the brain, just as the secretion of digestive fluids is a function of the stomach. Activity of the mind is

accompanied by activity of the brain. There is a corresponding consumption of nourishment by the brain cells and tissues, and a corresponding production of waste products, just as ashes and cinders are produced by the consumption of fuel in the production of steam. The taking in of the nutrient material by the blood, its conversion into other compounds in the brain tissues, the putting into the brain cells of new and fresh material and the removal of the wasted and worn-out products, all this is accompanied by or results from activity of the mind. We would not deny that mind may have a separate existence, separate and apart from body organs, for it may have a connection with spirit and may be eternal in existence and imponderable in substance; but as far as this life is concerned, as long as this body exists there are certain definite relations between states of the brain and conditions of the mind, and we know nothing of the mind except as it is seen in certain forms of activity of the brain.

It is for this reason that the same laws of heredity that control the one are also active in controlling the other. The transmission of peculiarities in one and the inheritance of defect in either must be accompanied by like transmission and inheritance in the other. There is such an intimate relationship between them that no human agency can separate them. The Power that called us into being has implanted in our tissues certain properties, and as we hand down to our children the peculiarities of these tissues, in just the same degree do we hand down their properties and forms of activity. In this sense mind is such a property of certain tissues in the brain, and it obeys the same laws as to its transmission.

But how about the quality of our acts from a moral standpoint? Where do they receive this property? Is there any relationship between our bodily structure and

our moral characteristics and propensities? The suggestion is a little startling at first, but let us not flee from it. It is worthy of some thought and investigation. What evidence is there? In the first place, do changes in bodily structure ever cause changes in moral traits and the quality of our acts? I answer unqualifiedly that they do frequently have such an effect. I have seen scores and hundreds of instances. Let a poor, overworked and worried mother become anemic and run down in strength. She has been usually cheerful, self-sacrificing and industrious, yet she becomes despondent and depressed, looks on the dark side of everything, her past life to her has been but a succession of sinful acts, she has been guilty of almost every sin in the decalogue and many outside of it. The moral quality of her acts is to her entirely changed, and solely because her brain tissues are diseased. The change has a physical basis entirely. Another, a young lady, has been modest and gentle, quiet and retiring, dutiful and proper in deportment. She becomes ill, and as a result there is a complete change in her moral characteristics; she is bold, loud, vulgar and profane, and makes use of language that you would suppose she had never heard, much less used. She is mischievous, untruthful, and generally untrustworthy. Why? Simply because the brain has become diseased in its mind tissues. I have a marked example of this change under my care at present. A young lady of excellent character, industrious, truthful, modest and retiring in disposition, was subjected to a sudden shock, as a result of which she went into a state of acute stupor or dementia, her mind being almost a complete blank. She had to be fed and looked after like an infant. She was extremely untidy, would not talk, and paid no attention to anything about her. After a few weeks under rest and feeding and proper attention to her

physical condition, she began to improve and gradually regained her normal condition, was cheerful and pleasant, ladylike and proper in conduct, and seemed in perfect physical health. She was permitted to go home. In a few weeks her mother visited me and said her daughter was not the same girl she had been before her sickness. She was disobedient and deceitful, traits she had never manifested before. She was untruthful, would make any sort of excuse to get away from home and out on the street. She was engaged to a young man, and would tell her mother she was out with him to some place of amusement, when in truth she had made a secret engagement with some one else of questionable character and a stranger to her parents. She was loud in her talk on the streets, and inclined to be a little boisterous and reckless. All these traits, while only such as are often seen in young girls, were entirely foreign to her characteristics before her illness, and they caused her parents much uneasiness. Finally she became so uncontrollable, and the danger of harm to her was so great, that she was brought a second time to the hospital. There she has manifested the same traits of character, but under the influence of regular life and close restrictions, as well as a regulation of her hours of rest and her general physical condition, she is kept within bounds and is more tractable. She shows no other disorder, and there is no insanity other than this change in the moral character of her acts.

There are many such cases in my care, and many more scattered through every community. What is the change? It certainly has a basis in tissue change, and is accompanied by decided modification of moral qualities. Almost every case of insanity has more or less of this change in disposition in one way or another. Take epilepsy, for instance. This is purely a physical disease of the brain and nervous system, and yet change in

moral character is often a prominent symptom in its course. The insane will often lie and deceive, are often mischievous, and exhaust their ingenuity in trying to contrive methods of making themselves disagreeable to their nurses and those in charge. They often do this for the sole purpose of being disagreeable and causing trouble, and all these traits being the product of their disease.

One of the most difficult tasks I am called upon to perform is to weigh the testimony of patients as to occurrences in the hospital. Much of it is wholly unreliable, and to sift out the grain of truth from the chaff of deceit and falsehood is often very difficult.

The insane are in most instances so changed by their disease that they become in reality other individuals, so unlike themselves in a state of health that it is difficult to recognize them as the same. This change is largely a moral change; the quality of their acts is modified. They view matters differently, and express wholly opposite opinions of morals, and the right and wrong of particular acts.

Now what do such facts signify? Simply that in the conditions of certain physical tissues of our body there lies an influence that affects the quality of our acts, and in their states of nutrition and degree of development we see factors that modify our activities as units in the social composition. The relationship, in other words, between physical structure and moral qualities is in all respects similar to that between bodily tissue and mind. Spirit in its essence is doubtless pure and perfect in all its parts, just as the ideal body is perfect; but as it is associated in human composition, and as an integral part of our bodily structure, it is modified by physical states, restricted by the limitations of tissue development, and varies in all its forms of activity with the varying states of these associated tissue forms.

Now the transmission of character from parent to child is a transmission of actual physical elements that have in them the germs of tissues whose peculiarities inhere in the peculiarities of these germs. Certain natural propensities lie inherent in the warp and web of our body structure, and they descend from parent to child in precisely the same manner.

There can be no such thing in nature as a fixed standard of morals by which all individuals can be fairly judged. The measure of our responsibility as between us and our Maker may not be the same as that of any other living being. We are each held responsible exactly for what God has given us; no more and no less. This responsibility is exactly adjusted in each case to the sphere of our capabilities. Nothing more is expected of us than we can perform. We are expected to keep untarnished that which is given us, and to hand it down to our children uninjured, and with all its capabilities for development and advance enlarged and cultivated. We are to utilize every feature of our environment that tends to build up, and to avoid any influences that tend to depreciate. We are to remember that in the preservation and perfection of bodily structure we combine the preservation and perfection also of all our activities. We are to cultivate the latter by cultivating those elements in bodily development that best contribute to the enlargement of traits and energies that are desirable, and above all else we are to remember in passing judgment upon our fellows that the moral qualities of activities adhere in physical states, vary with variations in the conditions of physical tissues, and have just as actual an individuality and just as wide limits of variation as these bodily structures.

But it may be said, if the moral quality of activities is dependent upon physical states, does not this deny

the right to sit in judgment upon our fellow-men, to inflict upon them punishment for errors or willful misdeeds that have after all a physical basis, for which the individual should not be held responsible? This seems plausible, but is not so. There is but one excuse or justification for man presuming to pass judgment upon his fellow-man, or to mete out penalties for what he may consider wrong-doing, and that is the protection of society. He is justified in inflicting only such penalties as may deter the individual himself or others from acts that are found to be prejudicial to society's best interests, and *per contra*, man is justified in making use of any penalty that offers the prospect of advancing society's good. The use of punishment is twofold: First, to deter the individual or to prevent him from pursuing injurious practices; and second, to deter or prevent others from imitating him. Experience has shown, we believe, that punishment has some such beneficial tendency, and it has an individual application. It is to be applied to man as a unit, possessing distinguishing features that inhere in body, mind and spirit, and to be so applied to this unit as will most effectually and most strongly conspire to enlarge its function for that which is desirable and best.

I may have decided limitations placed upon me by peculiarities of my bodily organization, limitations that extend to the quality of my acts, and yet I may be influenced by the fear of punishment and controlled in my tendencies by my knowledge that I shall be held responsible to my fellow-man for the effects of my acts, and just so far should penalties be inflicted if I fail to do that which I know to be proper. One degree of punishment may be proper for one and another more proper for another, simply because his structure is different, and from each of us an accountability should be exacted that is exactly proportioned to the capabilities of our construction.

This wonderful human organization is a unit, indivisible in structure and energy, combining in every tissue of its construction activities that as a united whole present the features of mind and spirit as well as those of motion and chemical change, and the individuality that we see throughout is an individuality that inheres in bodily structure and is handed down from generation to generation in the germs of tissue that pass from parent to child, carrying, in these, impressions that in greater or less degree shape and modify mental and moral characteristics. A study of heredity must include all these, omitting none and remembering the inseparable relationship among them. Although these are such facts as cannot be exhibited in the mathematical precision of statistical table and chemical equation, they are none the less real and none the less worthy of our careful reflection and regard.

ANTITOXIN IN THE TREATMENT OF DIPHTHERIA, WITH REPORT OF FATAL TERMINATION OF CASE AFTER RECEIVING PROPHYLACTIC DOSE.

S. S. HALDERMAN, M. D., PORTSMOUTH, OHIO.

A death occurring in about four minutes after injecting under the right scapula, in a boy five years old, a prophylactic dose of Behring's Antitoxin No. 0, furnished the excuse for this paper.

After an experience of eight months in the treatment of diphtheria with Behring's remedy, embracing the administration of the remedy to seventy cases of the disease, several of them bacteriologically examined, and all presenting the usual well-marked signs and symptoms of the disease, and occurring during an epidemic of a severe type of the disease, characterized by a high rate of mortality where antitoxin was not employed in the treatment, without losing a case so treated, and after using it for prophylactic purposes in twenty-seven cases that had been directly exposed, and in many of

these the exposure was continued, with the desired result in preventing the disease in all but three cases, these three cases manifesting evidence of the disease within less than seventy hours, showing that it was already in their systems and incubating, I felt justified in the use of the preventive remedy in this case. There were seven children in the family, the oldest less than eleven years, the two youngest five months old; they had commingled freely with the affected children, and that those not affected, five in number, would have diphtheria seemed to all concerned very evident.

After having treated the two oldest children, aged respectively eight and ten years, to the satisfaction of the parents, who had previous unpleasant experience in the deaths of two children, relatives, both occurring in one day, I did not feel justified in withstanding their importunities to use the remedy to prevent, if possible, the dread disease in the other children.

I had given the prophylactic dose, Behring's No. 0, to Seva, aged two and one-half years; Willie, aged five years, was awakened from a sound sleep, and the same dose, No. 0, operation No. 161, was injected just below the right scapula in the tissues underlying the skin; he made but slight outcry, lay down, and was noticed to try to scratch the seat of the injection. I walked across the room to a table, washed my syringe, which consisted of an ordinary barrel and piston made for the purpose, and capable of holding about 30 c. c.; after having washed it in hot water I took the cork from another bottle, No. 0, which as you are all doubtless aware consists in quantity of about 2 c. c. of the serum, took this up into the syringe, and proceeded to administer it to George, aged six years; while I was making this injection the mother's attention was attracted to Willie by some struggle on his part, and she immediately called to me that something was wrong. I looked and observed

a striking cyanotic appearance of skin of face, puffing, swollen appearance of lips; with the finger could detect no radial pulse; ear to region of heart revealed the absence of the faintest sound from that organ. A resort was immediately had to artificial respiration, while the parents were directed to procure a syringe and inject some whisky per rectum. Twenty-five minutes' effort at restoration was of no avail. It is my opinion the heart never pulsated after less than four minutes from the time he got the injection.

As to the cause of the fatal result, it is not clear to my mind. The suggestion of a fellow practitioner seems reasonable, and I can do no better than give his words: "It was one of those peculiar idiosyncrasies that sometimes we meet with, obnoxious to agencies and influences that do not affect the general class, and that we cannot guard against because of their infrequency and negative indication." We meet with such now and then when exhibiting anesthetics and other agents—and even in the cases of the disagreements of some kinds of food, not ptomaines but which seem to act as poisons, like oysters and shell-fish of any kind, eggs and milk, too, sometimes. You have all doubtless met with these peculiarities.

The wide adoption of antitoxin as a remedy in diphtheria enables one to draw some useful conclusions as to its value, yet I speak with some caution and reserve with my limited experience with the remedy, and the results in my own practice have led me to wonder if it were really the treatment with antitoxin or the non-employment of remedies, such as chlorate of potassium internally, and local irritants to the diseased parts, that had something to do with the uniform and rapid recovery of my cases. Drs. Hare, Smith and others have advised against the internal administration of chlorate of potassium in the disease, because of its possible

damaging effects on the kidneys; yet it is not an uncommon thing to see prescriptions containing a saturated solution with an excess of the salt, the patient directed to take a teaspoonful of this mixture every one, two or three hours. The question very naturally arises, how many cases of fatal kidney disease might not have occurred had chlorate of potassium not been employed? I have not given a grain of the salt in diphtheria for many years, and since the adoption of antitoxin have given but few drugs. Usually in conjunction with the injection of antitoxin, I would give calomel pretty freely for its cathartic effect, advise the free administration of beef tea, sterilized milk, coffee, and, if the patient desired, any carefully prepared food, and give a prescription combining a few drops of tr. ferri chloride in glycerine and syrup, to be given hourly, more to occupy the mind of the nurse than for any other purpose. If there was great restlessness, small doses of chloral and morphia to procure the desired sleep, as you are aware nearly all cases of diphtheria are attended with considerable restlessness. After exfoliation of membrane and subsidence of fever, would give small doses of quinia and strychnia:

℞ Quinia Sulph. . . . . gr. xv.
Liq. Strychnia Acetate, "Hall's," ʒ j.
Yerbazine, "Lilly," . . . . ℥ iij.

M. S. Half-teaspoonful every four hours to child one year old, and order its continuance for not less than three or four weeks.

Of the various local applications administered I think most of that of Löffler, and in young children have diluted the solution with alcohol and water, and directed that the mouth be swabbed out occasionally with this preparation. In the case of older children and adults would advise the use of the solution in full strength. The preparation consists of menthol 2½ drachms, dis-

solved in 9 drachms of toluol, 1 drachm liq. ferri chloride, and alcohol 2 ounces.

Of the seventy cases of diphtheria treated by the writer, abscess did not occur in any; of cutaneous manifestations one, a slight urticaria occurring fourteen days after injecting a girl, aged eight years, with Behring's Antitoxin No. 2. This patient had also some slight manifestation of articular trouble in left hip, but the mother, a very intelligent lady, said the child had previous to her illness from diphtheria frequently complained of joint pains, and she thought her rheumatic. Diphtheritic paralysis was noted in one case, was of short duration; in this child there was irregular heart-action occurring at the same time with paralysis, about twelve days after receiving the antitoxin. Albuminuria was noted in five cases; one of these was a case of diphtheria supervening upon measles; a boy five years old had a severe case of measles, and on the eighth day of that disease was attacked with croup, which was proven diphtheritic bacteriologically.

There was abundant evidence that the formation of the false membrane was checked; that its exfoliation was hastened, that the throat was free from membrane earlier than in cases not treated with antitoxin. It was clearly apparent from all the manifestations that the toxemia was relieved and lessened. The health officer's record shows that cases treated with antitoxin were discharged convalescent in less than an average of seven days, while those treated with other methods had an average of ten days. Of five cases having the appearance of being mild, treated by the writer without antitoxin, two died. Of the three recoveries, one was unable to walk from September 20th to November 11th; another was feeble for some weeks in spite of careful nursing and continued administration of tonic remedies. One of these cases was so very mild in appearance that the

mother protested against the use of antitoxin; said she would not believe the child was sick if she did not see the swollen glands and exudation in throat. This child died ten days after the invasion of the disease, from laryngeal stenosis, expiring within half an hour after symptoms of croup.

Experience and statistics all show the importance of early treatment by serum, mortality increasing with the days of the disease before treatment. Under the influence of early serum treatment, the disease loses its progressive character, and this is true in regard to laryngeal stenosis. Of the seventy cases there was but one instance in which laryngo-stenotic symptoms developed. In many cases of very active glandular inflammation, with abundant formation of membrane, the effects of the treatment were very striking. Within thirty-six hours, in some of the most severe cases, there was marked improvement in the general condition, improvement of pulse, fall of temperature, and considerable, if not complete, exfoliation of membrane.

The limitation of time makes it impossible to discuss the position of the antitoxin treatment of diphtheria fully, and I will not consume the time of this convention with statistics, but will conclude by saying that in my opinion all patients are benefited by the treatment when administered in time to accomplish any results, with a reasonable hope of recovery. The administration of antitoxin does away with the necessity for any other but the use of local disinfectants to prevent or limit the growth of bacteria in the throat, and supporting treatment.

I desire to include in this report a case of measles—a previously healthy child, a female five years old. On the fifth day of the eruption there was observed decided faucial inflammation, with a tough, yellow-looking deposit covering tonsils and uvula, slight elevation of

temperature, but not high fever. Dr. P. J. Kline was called in consultation, and inclined to the diagnosis of diphtheria. Some of the membrane was given the bacteriologist, and he reported no Klebs-Löffler bacilli. It was decided, however, to administer antitoxin. The tincture of the chloride of iron was given freely, with the liberal administration of whisky and milk. The throat was sprayed with peroxide of hydrogen. The child succumbed with laryngeal stenosis in the morning of the third day after the disease of the throat developed.

A little cousin of the same age, who occupied the same bed with the affected child up to the development of the disease of throat, and was in the same stage of measles, did not have any disease of throat; nor did two older children, who were convalescent with the measles, have the slightest throat trouble.

DISCUSSION.

DR. KLINE:

I cannot view antitoxin as a specific for diphtheritic trouble, but if statistics amount to anything the death-rate has certainly been very greatly reduced since that remedy came into use. In our city we have had 300 cases of diphtheria from the 11th of August to the present time, with a death-rate of 12 per cent. Many of these cases never received any antitoxin treatment. Those of us who remember the ravages of diphtheria as far back as 1873 and before that, when the death-rate was 50 per cent. and more, will certainly consider this a very low death-rate. I can readily appreciate what the Doctor says about the early administration of this remedy, because if it does any good whatever, and I believe it does, it is in the early stages of the disease. If you wait too long the antitoxin will do no good. I have seen patients during the last winter die from laryngeal stenosis and toxemia, which I believe was caused by waiting too long before administering this remedy. Medical literature is full of this

subject, and I do not mean to take up your time to refer to the matter; but I have seen very little difference between what we now witness and what we saw before antitoxin was heard of; for patients then had paralysis, and died as they do to-day, and probably we lay many things to the antitoxin which belong to the disease itself. While I cannot look upon the remedy as being a specific, yet I think if properly used and at the proper time, and I mean in large doses, it is a remedy capable of very great good in our hands. For the sudden death of the little patient, to which this doctor refers, I do not believe I can offer any more explanation than in the case of Professor Langerhaus. We know in the use of morphia and chloroform we have fatal results, but we do not abandon such valuable remedies because fatal results follow their use.

DR. WILSON:

I am sorry to have been detained so as not to hear Dr. Halderman's paper, but I have a few words I wish to add.

I have had some experience with this remedy and have used it in an experimental way, watching its effects and the effects that follow the injection of the antitoxin. I have found the reaction following the dose of antitoxin a good deal more decided than has been made plain in most of the medical journals. I find for the first six or eight hours after the administration of the antitoxin the child not only has an increased fever, but is very restless, and the soreness accompanying the injection is quite troublesome. I have been giving the injections in the back, and the child hates me from the time I make the injection until it gets well. I have used in two cases of diphtheria, hypodermic injections of the nucleins in different forms, and in two cases have used the hypodermic injections of the protonuclein powder, the special solution, with the application of the protonuclein powder to the tonsil, and it has seemed to me I have had as good results with the nuclein as I have with the antitoxin, with a good deal less discomfort. This discomfort has amounted to a drawback in my hands, and if any of the members know how they can give these large

injections without the soreness and pain following, I should be glad to hear from them along this line.

DR. HUBBARD:

A plausible explanation of sudden collapse or syncope in such cases is that a large portion of the injected fluid finds its way directly to the heart, and the coronary arteries become filled with blood containing a dangerously large proportion of antitoxin. The injection of any harmless substance might of itself produce a condition of syncope, but where the heart is saturated with this unnatural fluid it is not able to recover. We know that following injections even of morphia we have syncope, which may be due to a portion of the fluid finding its way directly into the coronary system, but the drug not being in large quantity and comparatively harmless, the heart recovers and the syncope passes off. It has several times occurred to me that it is not surgical or rational to give a large quantity of a potent drug at one injection Of course, the argument that the repeated use of the syringe causes more pain, is a good one; but when we consider the danger, I think it is rational treatment to divide the dose of antitoxin. We are under obligations to Dr. Halderman for his very clear detailed report of this case, and his carefully matured opinion of the causes of fatal termination. It has attracted much attention, and we will doubtless hear more of it from the critics and authorities.

DR. HALDERMAN:

I only have to say in regard to the suggestion of Dr. Wilson, that in my experience there has been but very little soreness of the muscles following the injection. In a few cases there has been some pronounced constitutional disturbance, such as elevation of temperature and some local soreness, but it was of such character I did not regard it worth mentioning. The operation is usually so painless that many little ones, not large enough to be frightened at sight of the syringe, make but little outcry.

I think the Secretary, if I understood his observations correctly, did not understand the quantity of antitoxin

used in this fatal case. I gave two cubic centimeters of the remedy, Behring's No. 0. The possibility of the injection of air has been suggested to me. I feel as confident as I can feel of anything, that there was not any air injected in this case. I have always been exceedingly careful to exclude every bit of air in making subcutaneous injections.

If there be a reason for this death other than idiosyncrasy, I have been unable to recognize it. I can understand how merely thrusting the needle under the skin might snap the vital cord.

I have thought that a remedy so potent could not be entirely free from danger, but in the use of it I am satisfied that we have a preventive. The possibility of the age of the remedy has been suggested as a source of danger. I have seen it stated that this remedy does not deteriorate within a year. I have given the No. 3, as a curative remedy, to a child from fifteen to eighteen months old ; have given No. 2 repeatedly to children of various ages, but ordinarily have used No. 1.

THE TREATMENT OF DIPHTHERIA.

J. E. Fackler, M. D., Versailles.

Inasmuch as the general history, etiology, pathology and diagnosis of diphtheria are matters of record to which all have access, and having nothing new to add to any of these departments of the study of this malady, I will say as little in reference to these as is consistent with an intelligent and practical presentation of a plan of treatment that has been found most efficacious, as compared with all others that have become matters of record and subjects of comparison.

The recognition of this disease by the physician is seldom attended with any unusual difficulty. Ordinarily the chemical analysis of the fluids of the body or the microscopical examination of the bacteriological elements of the disease is not required, but by simple inspection the diagnosis may be made with as much certainty as that of typhoid fever, pneumonia, malarial fever, and many other diseases. This is not intended to disparage the great value of the work of the bacteriologist, but in cases where the symptoms presented by the patient are insufficient, the aid of bacteriological examination is thankfully accepted.

That the primary reasons for the presentation of this paper may become more apparent, let us consider for a

moment some of the more characteristic and striking features in the clinical history of this affection. It is essentially a disease of childhood, however not limited to this period of human life except so far as mortality is concerned. In many instances it exhibits a rate of mortality that is most appalling. In some epidemics almost all die.

In the Willard Parker Hospital at New York, as reported by A. Campbell White, M. D., in the *Medical Review*, Nov. 11th, 1894, the average rate of mortality for the two preceding years of children between the ages of five and sixteen years was 17.8 per cent., and of children under five years of age 42.7 per cent., making a total average of all ages of 30.25 per cent. The average mortality of all classes in the Kaiser und Kaiserin Friedrich Kinderkrankenhaus at Berlin for the last five years preceding the introduction of the antitoxin treatment, as reported by Prof. Baginsky, was 40.25 per cent. The reports of numerous other observers, both in this country and in Europe, indicate a mortality ranging from 25 per cent. to 80 per cent., so that the general average of deaths in children of all ages as indicated is about 40 per cent.

Since the introduction of the antitoxin treatment the mortality has been reduced about one-half. Prof. von Widerhofer, of Vienna, reports a mortality under the serum treatment of 23.7 per cent. Baginsky, of Berlin, reports a mortality of 13 per cent. Dr. O. Heubner, professor of pediatrics in the University of Berlin, in summarizing the reports from all sources where the antitoxin treatment was used, shows the average mortality to be 20 per cent.

The treatment which exhibits so high a rate of mortality in any disease of this period in life, will not remain unchallenged by an intelligent and progressive profession. Mere clinical statistics, however, are of no

value, only so far as they serve as an expression of the experience of the physician. The impressions the intelligent physician receives at the bedside are of far more weight in determining the efficacy of a remedy, or in estimating the relative value of any system or plan of treatment, than the most accurate and reliable statistics can afford.

That the treatment indicated in diphtheria should be antiseptic, germicidal and tonic is a well-established fact and universally admitted. Many remedies of this class, nevertheless, have proved unsatisfactory, and but few have maintained a prominent position for any great length of time in the treatment of this disease. Among the later, however, may be named potassium chlorate, tincture muriate of iron, hydrochloric acid, turpentine, phenic acid, and pinus canadensis. The first three of these preparations have for many years held a conspicuous position in the armamentarium of the practitioner, and still continue to be extensively used.

In a somewhat extended and exhaustive paper read before this Society by Dr. J. S. Haldeman, of Zanesville, O., and published in the Transactions of 1894, the preference of remedies in the treatment of diphtheria seems to be given to a combination of quinine, chloride of iron, sulphuric acid, chloride of sodium and glycerine, for which very satisfactory effects are claimed.

In a paper read before the North Carolina State Medical Society by Dr. R. A. Patterson, and published in the *Medical Review*, St. Louis, Sept. 9, 1893, are reported a series of thirty cases treated with a combination of potassium chlorate, dilute muriatic acid, tincture muriate of iron and water, with most satisfactory results; all recovered.

From observation and some years of personal experience in the treatment of this malady, I am convinced that the efficient germicide and antiseptic, the true

specific, or antidote for the toxic principle of diphtheria, is found in these remedies.

Early in the history of my experience in the practice of medicine I was much impressed with the favorable results obtained from the use of a preparation of chlorine in the treatment of certain zymotic diseases, notably typhoid fever. Reasoning from analogy, the use of it was extended to the treatment of diphtheria, and for more than a quarter of a century the chlorine treatment has proved uniformly successful, not only in my own experience but likewise in the hands of neighboring physicians who have made use of the remedy, not a case under this treatment having proved fatal in all this time.

Believing that good results are dependent upon the careful preparation and proper manipulation of the remedy, and that successful treatment is obtained not only from the selection of the proper remedy but by its prompt and judicious use, the various steps in its preparation and administration will be given with sufficient minuteness for all practical purposes. The remedy is prepared as follows: Take a four-ounce bottle, rinsed and well drained, put into it about one drachm (ʒj) of potassium chlorate in coarse powder, add from sixteen to twenty drops chemically pure hydrochloric acid, apply gentle heat to the bottle until it is well filled with the gas. (This part of the process should be prudently guarded, that the dangers of a possible explosion may be averted.) Now pour into the bottle a small quantity of cold water, close the mouth of it and shake briskly for a few moments, add a little more water and shake as before; repeat this process till the bottle is filled. This manipulation must not be conducted in the rays of the sun, and when completed the bottle must be corked and carefully enclosed in a wrapper to exclude the light. It is now ready for use.

In the administration of this preparation, no metallic spoon or vessel of any kind should be used, but take an empty glass tumbler and pour into it directly from the bottle about a teaspoonful of the chlorine preparation, and add to it sufficient water to admit of the solution being conveniently swallowed. This potion should be taken in about three hours' time, by the patient swallowing a small quantity every twenty or thirty minutes. That the remedy may remain in contact with the throat as much as possible, nothing else should be swallowed soon after taking it.

If the secretions of the mouth be offensive, the mouth should be carefully cleansed by washing out with the solution, and all necrotic tissue and detached membrane that can be removed without violence to the congested and inflamed parts, should be mechanically removed; but no attempt to gargle or swab the throat should be made, neither should any harsh measures be instituted at any time, but the parts should, as much as possible, be maintained in a state of quiet repose.

If there be considerable fever, temperature 102° F. or more, the exhibition of fluid extract veratrum viride one drop, with fluid extract aconite one half drop, in a teaspoonful of water every hour, will in a very short time favorably modify the pyrexia.

In cases where there is torpidity of the bowels, congestion of the portal circulation, and want of proper action of the liver and kidneys, free action of the bowels should be obtained by the administration every two hours of calomel one-quarter grain, and bicarbonate soda four grains, thoroughly triturated with sugar of milk, during which time the use of the chlorine must be suspended or withheld.

In a large majority of cases, however, the persistent and judicious administration of the chlorine solution alone is all that is necessary.

Improvement in the appearance of the throat and the general condition of the patient is almost immediate, and after the first twenty-four hours of treatment is quite marked. The efficacy of this remedy is not limited to diphtheria alone, but extends to all cases of a diphtheritic character, necrotic and putrid sore-throat, and scarlatinous angina.

How this remedy acts I am not able satisfactorily to explain, neither is it necessary; the fact that it cures is of greater moment to the physician and the patient than everything else connected with it. It is most probable, however, that it attacks the poisonous substance which the pathogenic bacillus is said to secrete, the toxalbumen upon which the virulence of the disease depends, neutralizes, eliminates and renders it harmless.

The chlorine solution should not be abandoned until the throat is clean and the ulcers are healed. When the acute symptoms have passed and convalescence is measurably established, the tincture of the chloride of iron in small doses, dispensed in water and glycerine, will aid greatly in the restoration of the patient. As an outward application to the throat, in severe cases, an ointment of camphor and turpentine has seemed to be most satisfactory.

The dosage and treatment here given is that for a child four or five years of age. In cases of infants the chlorine solution may be converted into a syrup by the addition of sugar, and is easily administered, with equally good results.

The chlorine gas should be utilized as a disinfectant of apartments and dwellings infected with diphtheria. This in rooms unoccupied may be thoroughly effected without any difficulty. But in rooms that are occupied some degree of caution must be observed that the atmosphere does not become too irritant to the respiratory organs of the occupants. To readily accomplish such

fumigation take an ordinary dinner-plate, place on it a quantity of potassium chlorate in coarse powder, pour on to it a proportionate amount of hydrochloric acid (C.P.). Moderately heat the plate if necessary, carry it about the room or set it in a convenient place, while the gas is being disengaged. From infected foci treated in this way I have never known diphtheria to be contracted or to extend to other members of the family with any degree of virulence; but all subsequent cases were milder in form, more easily controlled, and of comparatively short duration.

If the condition of the patient requires that the secretory and eliminative organs be aroused and brought into proper action, this should be promptly and effectively accomplished by the use of the calomel triturate as above indicated, followed, if necessary, by the administration of castor-oil and turpentine.

The chlorine preparation should be renewed, that is, made afresh, every few days, as it may soon become deteriorated, especially if improperly handled.

DISCUSSION.

DR. DICKSON:

A year ago last winter we had an epidemic of diphtheria break out in our city, and I think our city was the first in this State to give the antitoxin a thorough trial. We also had the assistance, at that time, of Professor Howard, professor of pathology in the Western Reserve University. We learned some things in that epidemic, one of which I wish to mention, viz., that it is not easy to diagnosticate diphtheria. We discovered that we can have a seeming angina that is diphtheria, and a seeming diphtheria that is an angina. In one case the child was mildly sick, and the next week another child in the same family was sick, and we found diphtheria on bacteriological examination. In another case we thought we had diphtheria, but found no bac-

teria on two examinations. I think every town should have an apparatus fitted out for the examination of these cases.

We have had one or two peculiar results from the use of antitoxin. A lady who is a professional nurse contracted the disease while nursing a patient, and had the antitoxin used. Before that time she was a perfectly healthy girl; since that time she has had a rise of temperature, probably four-fifths of the time, to 100°–101° every evening, with glandular enlargement in different parts of the body. Of course, this is only one case and we cannot definitely attribute it to the antitoxin, but she attributes it to the use of the antitoxin.

We have had several cases of subacute rheumatism following the administration of the antitoxin. We have had some severe cases of erythema immediately following the administration of antitoxin. Professor Howard injected into my arm the antitoxin, and I was attacked, in ten minutes, with asthma, and the breaking out of a beautiful display of erythema almost equal to the aurora borealis. But with the exception of the case occurring in the nurse, which I have mentioned, we have had nothing serious. I am so strong an advocate of the remedy that I use absolutely nothing else if I see the case of diphtheria in the first twelve hours, giving (according to the age of the child) a large dose. I use simple chloride of sodium as a wash, with a fountain syringe, for cleansing purposes only. I went a week ago in consultation to see an undoubted case of diphtheria, and gave 15 c.c. to a child seven years old, and the next day 10 c.c. I got a letter from the attending physician and his language was about this: "The only objection we have to the use of antitoxin is, it is apt to throw discredit on our diagnosis." If that is true, gentlemen, we should not condemn it without a thorough trial.

DR. FACKLER :

In reply to the inquiry the gentleman made, in regard to my experience in epidemics of this affection, permit me to state that I have observed a number of epidemics during my experience in practice. I commenced the practice of medicine at the close of the first epidemic of

diphtheria that swept over our country in recent times, and I have seen the beginning of a number of epidemics since that time, in which all cases, before the treatment I have indicated this morning was brought to bear, died, and after the introduction of this treatment there were no more deaths, and no more epidemic shortly, for the malady was at once arrested.

NOTES ON THE PRESENT STATUS OF MILITARY MEDICINE AND SURGERY.

JAMES E. PILCHER, M. D., PH. D., COLUMBUS,

Captain in the Medical Department of the United States Army.

I must offer my sincere apologies to the Society for attempting to cover so extensive a field as the Present Status of Military Medicine and Surgery in so brief a time as that allotted to me. Had I been aware of the time limitation when I agreed to present my paper, I should have chosen as my topic rather a single one of the many phases of work that crowd upon the attention of the military medical officer.

But in view of the fact that my subject has already been announced, I am compelled to adhere to my original plan and refer in a much less complete manner to certain of the more salient features of a specialty that in these piping times of peace is receiving from the general profession much less attention than its merits entitle it to. For the military medical officer is emphatically a specialist, although his specialty is not only most difficult to define but is also most frequently misunderstood. It is nothing more nor less than the

whole field of medicine as developed in military practice and modified by military conditions. The term "military surgeon" is a misnomer, for although operative work forms a large amount of the duty of the medical officer in times of war, surgical cases never preponderate. The statistics of our War of the Rebellion show that less than a third of the fatalities in that great conflict were due to surgical causes. Without attempting then to underrate the importance of surgery in the work of military medical men, it must be admitted that medicine and hygiene are of equal if not greater moment. In the Army Medical School, established in Washington, facilities are afforded for the postgraduate instruction of young medical officers in the essentially military features of their work. Every military medical neophyte is here put through a course of study covering a period of four months devoted to the study of matters not included in the curriculum of the medical schools but of vital importance in military work. In the laboratories of the school are furnished opportunities for advanced study and for review work upon the part of the older officers, and here original scientific work of the highest type is constantly under way. In this way the young candidate is initiated into military specialism, but it is merely a beginning, for he soon finds that it requires long experience and actual service to develop him into the full-fledged military medical officer.

The military aspects of medicine, surgery and hygiene form so broad a field that, as already remarked, it will be possible merely to refer to a few of the salient points in which the work of the military medical officer of today differs from that of his predecessor of half a century ago.

Perhaps the most prominent feature is the relatively greater weight of the military medical officer. He is no longer a subordinate paid to attend upon the sick

whenever they may desire his services. It is now his first duty, as prescribed in the army regulations, "to investigate the sanitary condition of the army and make recommendations in reference thereto." Commanding officers are required to act favorably upon such recommendations or to state fully in writing their objections to them and to transmit the matter to higher authority. If the reasons given are not cogent ones, the commanding officer is, as a rule, directed to comply with the recommendations of the medical officer. It is due to the line of the army as it stands to-day, however, to say that the efforts of the medical officer to improve the sanitary conditions of the service almost invariably meet the most cordial and enlightened response and the earnest and interested cooperation. The day has passed away of the choleric old commandant, who roared, "Drain my camp, sir? I'll be damned, sir, if I'll drain my camp, sir!" As a result of this the mortality of our army garrisons is uniformly much less than that of the surrounding country. A small town adjoining my last station had an annual mortality rate of two and one-half per cent., while the death-rate of the garrison was zero. The position of the army medical officer as a sanitarian has become almost an ideal one.

The oversight of the medical officer extends not only to the environment of his clientele, but to their very personality. Their food is carefully observed, and defects and deficiencies corrected, especial attention is devoted to their clothing, and efforts have been made to have it perfectly adapted to the varying climates in which they may serve. The hours and times of their duties are carefully regulated to secure the best results with the least strain, systems of exercises are provided for the symmetrical development of their bodies, and even their amusements are fostered and directed with

a view to the attainment of the most healthful development.

The advances in ordnance and explosives warn us that the battles of the future will be shorter, perhaps, but incomparably more destructive than those of the past. Our small caliber rifles are not only very far more fatal in the effect of their single projectiles, but they are more accurate in their aim, and by virtue of their magazine attachments far more deadly in their effect upon the enemy. The death-bearing stream of missiles spouted forth by the rapid firing Maxim pieces carves out spacious avenues of blood in the opposing forces, while the terribly murderous effect of the bursting modern shrapnel will instantly annihilate huge blocks of humanity. With dynamite, melinite, ballistite, and other perhaps even more lethal forms of high explosives applied to future warfare, the casualties will be increased to an almost incredible degree. The labor of coping with the care of the injured in conflicts in which these sanguinary implements are engaged, will be enormous beyond all precedent. The number of cases in which operative action will be required and the brief time available for the purpose will impose upon the military surgeon a necessity for dexterity and rapidity of work never before known. While the development of anesthesia has rendered deliberation and detail possible in the operative work of civil life, so that the old class of "lightning operators" has practically perished, the increased destructiveness of modern armament has rendered the demand for such men in the military service greater than ever. There will be little time for anesthesia, little time for operative niceties, and little time for the consideration of delicate shades of difference in operative procedures. The operation that permits the greatest rapidity in its performance will be the chosen procedure, and anesthesia will be possible only in the more serious cases, unless

a twentieth century Morton or Simpson should discover an instantaneous method of obtaining insensibility to pain. During the past few years the entire field equipment of the army medical department has been revolutionized in order to adapt it to the requirements of modern conditions of warfare—no easy matter in view of the kaleidoscopic changes characterizing nineteenth century surgery and the protean metamorphoses signalizing modern ordnance.

With the prodigious casualty rate consequent upon future battles, it will be absolutely impossible to remove the wounded from the field during the progress of an engagement. It will be out of the question for medical officers to attend every injured man. Indeed the mortality will affect the medical officers no less than the combatants. Out of twenty surgeons at the recent battle of Abba Carina in Abyssinia, seventeen were killed in action. It will be impossible to furnish adequate trained battle-field assistance of any kind. The only means, then, of preventing death from hemorrhage or other immediate avoidable causes is to instruct the troops themselves in the elements of first aid. This is now being done in the army of the United States. Not only is every officer and every enlisted man carefully instructed in the methods of applying first aid to himself and his comrades in case of injury, but a packet of suitable dressings, ample to temporarily treat any curable injury, is made an invariable part of the equipment of every soldier.

The removal of the injured from the field—which will probably hereafter be done at the close of an engagement—which was formerly left largely to chance and the mercy of one's comrades, is now made the duty of a special corps of trained soldiers, present with all troops in the proportion of two or three per cent. of the fighting force. These men form a part of the medical depart-

ment, are directly under the command of the medical officers, and are known collectively as the hospital corps. They are especially instructed in the methods of removing the disabled, and are drilled in concerted action so that a squad of three can lift and bear away a sick or injured man with remarkable gentleness and celerity, and a single man, in the absence of assistance, can unaided do the same, not quite as easily or gently, but with a dexterity and rapidity that is astonishing in the extreme. Such minor knowledge of elementary medicine and surgery as may enable them to cope with the most frequent emergencies, is taught them, so that they may always be able to step temporarily into the breach in case of the absence or death of a medical officer. These men, in addition to accompanying all troops on the march and performing their important field duties, have charge of the nursing in all army hospitals, a fact that is contributing enormously to the efficiency of army hospital administration.

Much more might be said of the work of the modern military medical officer, much more ought to be said to do the subject even partial justice. An attempt has been made merely to refer to a few of the more salient features. Our country has always been justly proud of the magnificent work done by her medical officers in the last war; and the incessant labor, progressive spirit and active interest shown by their successors in this period of peace is a guarantee that in the event of another conflict—which God forbid—an even greater degree of efficiency will be present, the sick will be more promptly succored, the disabled more quickly borne to a place of relief, and a fatal result averted from a far greater number of the unavoidable victims of war.

THE RADICAL CURE OF OBLIQUE INGUINAL HERNIA.

J. C. Oliver, M. D., Cincinnati.

A few years since, the majority of surgeons held that attempts at radical cure were only justifiable in those cases in which an operation had to be made to relieve strangulation. The percentage of relapses following the older methods of operating was so great that the term "radical cure" was a misnomer. More cases relapsed than remained cured.

At the present time this is not true. More cases remain cured than relapse. Statistics, always unreliable and ever unsatisfactory, have not been obtained from a sufficient number of operators to justify any attempt to state with anything like exactness the percentage of cures.

Coley (*Annals of Surgery*, April, 1895) reports 160 cases of inguinal hernia operated upon by the method of Bassini without a single relapse. The length of time after an operation before a cure can be said to have been attained, is given by this author as one year. Deaver (*American Journal of Medical Sciences*, June, 1895) records the fact that he has made 100 operations for the radical cure of hernia, but neglects to state the percentage of success. Bassini, in his original report at the

Congress of Italian Surgeons held in March, 1888, reported 216 cases. He has since reported 536 operations with only fifteen relapses (2.8 per cent.).

These quotations have been given merely for the sake of emphasizing the fact that we are hardly far enough along to state what percentage of radical cures will result when a large number of cases have been recorded and observed. There can be no doubt, however, that the percentage will be very large, provided the operations are made carefully and the results accurately recorded.

Another point of prime importance in considering the advisability of recommending an operation, is the mortality which follows. In order to consider this matter fairly, all deaths following the radical operation when done during the existence of strangulation should be disregarded, because of the fact that the mortality from strangulated hernia is very considerable. We cannot, therefore, say that the operation is responsible for death in these cases. The only fair test, therefore, is the one applied in the operations undertaken where strangulation does not exist. In the 160 cases reported by Coley (see above) there was but one death (from double pneumonia), probably an accidental complication, as the author distinctly states that there was no complication upon the part of the wound or of the abdomen. Deaver (see above) shows a mortality of 2 out of 68 cases. Halstead (*American Journal of Medical Sciences*, July, 1895) records 165 cases without a death. Beresowiky (*Deutsche Zeitschrift für Chirurgie*, 1895, Vol. XXXIX., Parts 3 and 4) gives a list of 220 cases without a death. Other authors might be quoted, but this seems unnecessary, because they will only serve to confirm what is given above.

Another thing that ought to be considered when discussing the mortality from these operations is the fact that a person with a hernia uncured is *always* in danger

of death through strangulation ensuing; therefore one is absolutely safe in saying that the mortality with operation is vastly less than without it.

Bearing the above facts in mind, we feel justified in making the statement that the presence of a troublesome oblique inguinal hernia in an individual otherwise sound is all that is necessary in recommending operation. Of course the patient's consent should be obtained.

There is no operation in the whole field of surgery which will give better results than this, providing the necessary skill and judgment be used, and the steps of the operation carefully carried out. The most important thing is to secure union by first intention. Suppuration is fatal to the desired result. The ligatures and sutures are of prime importance in securing primary union. Experience seems to have proven that silk and catgut should be avoided. Coley (*N. Y. Medical Journal*, Feb. 29, 1896) gives good and sufficient reasons for the abolition of non-absorbable sutures. Halstead (*loc. cit.*) advocates buried sutures of silver wire. A sufficient argument against the use of catgut is contained in the conclusions given by Lauenstein (*Archiv. für Klinische Chirurgie*, Vol. L., Part 2).

1st. Clinical observation shows that cases of wound infection occur from the catgut used in wounds.

2d. The proof whether in a given case the catgut has been the source of infection is difficult of demonstration.

3d. It can be shown, however, that the so-called sterile catgut of commerce contains germs that are ready to develop.

4th. As long as the so-called sterile catgut contains germs in a condition to develop, so long will there be suspicion that the wound infection comes from this source.

be completely separated from the cord and other adherent tissues, to a point well within the deep ring, and a moderate amount of traction made uniformly at all points, which is best accomplished by a series of artery forceps held by an assistant. (The blunt dissection of the sac from the cord and other structures is best begun at its neck.)

Ligation of the sac with catgut is now done, also by the transfixion method, having first twisted it at its neck. The sac is excised, leaving the pedicle about a fifth of an inch (one-half centimeter) in length, which immediately retracts into the abdominal cavity. If the hernia is very large, and thus the neck and opening of the sac are broad, Bassini applies, besides the ligature mentioned, a glover's suture for security's sake. When a congenital hernia exists, the sac should be cut off one inch above the testis. The reforming of the tunica vaginalis is of no importance, and the prevention of hydrocele will thus be attained. This completes the first step of the operation.

Second Step.—The upper and lower flaps, composed of the segments of the aponeurosis of the external oblique being well retracted by sharp hooks, the cord structures held out of the operative field by a blunt hook or the finger of an assistant (if necessary, we may lift the testicle out of the scrotum in doing this), the conjoined tendon of internal oblique and transversalis muscles on the upper side is now united to the shelving edge of Poupart's ligament by a series of interrupted chromicized catgut or kangaroo tendon sutures. Bassini prefers silk sutures. The Macewen blunt-pointed needle accomplishes this admirably, but any curved needle will do. The needle when passed through Poupart's ligament must not include more than one-fourth inch of tissue from the edge. The relaxed posterior wall of the canal, composed of the transversalis fascia, should be

included in the upper grasp of the needle along with the conjoined tendon. From four to six sutures inserted in this way will be sufficient to unite firmly the musculotendinous structures, forming a new posterior wall for the canal. In this reconstruction care must be taken not to constrict the tissues of the cord. The first two sutures, close to the pubes, include also the border of the rectus muscle. All of these stitches should be made to include a large amount, say an inch (two or three centimeters) of the internal oblique and transversalis muscles.

Third Step.—The formation of the anterior wall of the canal is accomplished by suturing the recently divided external oblique aponeurosis continuously, with fine catgut (Bassini uses silk), throughout its entire length. This reëstablishes the valve-like condition of the inguinal canal. Finally the skin wound is closed with interrupted sutures.

Where animal sutures have been employed, the wound should heal under one dressing, even in cases of strangulation. Perhaps two or three weeks in bed would be the average duration. Some have been allowed to get up as early as on the tenth day. No truss is advised.

After the above description it need only be said that Halstead's operation differs from the above in the following particulars: He does not split up the entire anterior wall of the inguinal canal, and he transplants the cord to a position just under the skin, after having excised the "superfluous" veins of the spermatic cord.

In a personal letter, Dr. Halstead says: "You may be interested to know that we have not had a recurrence of hernia since the publication of my first article. I think that we have operated upon two hundred or more cases."

As the reports of the Bassini and Halstead operations show such uniformly good results, it seems a work of

supererogation to draw comparisons. The reduction in size of the cord by excision of the veins is undoubtedly a step in advance, and should serve to prevent some recurrences.

The consensus of opinion seems to be that the success of the operation depends largely upon the material used for sutures. Kangaroo tendon is undoubtedly the best for the buried sutures, but we must not lose sight of the fact that Halstead invariably uses silver wire. I have used silver wire in a number of cases with excellent results, results which could not be improved upon. In spite of this fact it does seem reasonable to suppose that an absorbable suture would be preferable to a non-absorbable one.

The cases in which I have operated for the radical cure of inguinal hernia are so recent, that I do not care to put them on record as successes as yet. I have had a return of hernia in a woman upon whom I operated for a direct inguinal hernia, and on whom I used silk for ligating the sac and also for the other sutures. The silk caused suppuration, and sinuses remained until the last thread was removed. The hernia returned within five months. At present the other cases show no signs of recurrence.

One case in particular deserves to be reported because of an interesting complication: Mr. A. M., aged 23, street-car conductor, strong, healthy, vigorous man. Consulted me in regard to a hernia which had, according to his statement, existed for eight years. The hernia was upon the left side, and very evidently of the oblique inguinal type. Reduction was easy, and the canal seemed to be quite large and roomy. He had not been able to retain the hernia by means of a truss. He had employed the injection cure (?), in all having received upwards of thirty injections. This had been absolutely without effect. Considering the fact that a truss was of

little or no value to him, and also the fact that his occupation required considerable muscular exertion, I deemed it a proper case in which to attempt a radical cure. He agreed to the proposition, and on Nov. 11th, 1895, entered Christ Hospital, at which place on the following day, Nov. 12th, the operation was performed. On making the usual incision, the tissues in the neighborhood of the inguinal canal were found to be everywhere matted together by very dense, firm adhesions. The muscular tissue, instead of its usual fleshy appearance, was bleached to a white color. By very carefully picking our way along, we came upon the spermatic cord. It was necessary, in order to reach this structure, to go through the anterior wall of the sac itself. Having done this, we found that the hernial sac enveloped the cord completely. In other words, the testicle and the hernia were inside the sac (congenital hernia). Because of the very dense adhesions to the outer surface of the sac, a large portion of it was torn away during the manipulations. With considerable difficulty we succeeded in detaching the peritoneum from the cord and sewed the mouth of the sac together, and then allowed it to drop back into the peritoneal cavity. It was now found that the veins in the spermatic cord were enlarged and dilated (varicocele), and in order to reduce the size of the cord these veins were ligated above and below and the intervening part removed. From this point on, the ordinary steps of a Bassini operation were carried out, the conjoined tendon being sutured to Poupart's ligament with mattress sutures of silver wire. The aponeurosis of the external oblique was sutured over the vas with a running suture of catgut. The skin incision was then closed with a subcutaneous silver wire suture. The usual dressings were applied. The patient was put to bed in first-class condition, in spite of the fact that the operation had lasted two hours.

The following morning I found that the patient was suffering from retention of urine, and upon attempting to pass a catheter, discovered a purulent urethral discharge. In the evening it became again necessary to withdraw the urine. The following morning discharge was more marked, and he complained of tenderness in the region of the epididymis. His temperature at this time was 99°. By the following morning the enlargement of the epididymis was much more marked, was more painful, and there was considerable redness of the skin. In the evening of this same day the patient's temperature was 102.6°. The following morning the temperature was 101.4°. That evening, the temperature reached 103.6°. At this point we were brought face to face with the question as to whether the temperature was dependent upon suppuration at the site of the operation, or whether it was dependent upon inflammation of the epididymis. I was firmly convinced that our asepsis had been perfect, but still felt a little shaky as to what effect the prolonged manipulation of the cicatricial tissue might have produced. On the seventh day, therefore, I removed the original dressings and much to my delight found the wound in perfect condition. I therefore removed the stitches and supported the edges with strips of adhesive plaster. From this point on there was a progressive diminution of fever, the temperature reaching normal morning and evening on November 21st, and the swelling of the epididymis rapidly diminished.

About the twelfth day a small collection of pus was detected in the scrotum. This was opened by free incision. After this was done, the swelling of the parts rapidly diminished, the opening soon closed, and the patient was discharged at the end of the fourth week.

Whether this suppuration was due to the gonorrhea and epididymitis or to the hernia operation, I am unable

to say. Cover glass preparations of the pus were made, but unfortunately a microscopical examination was never made.

This case presents several very interesting features. The presence of the dense adhesions to the outer wall of the sac rendered it a decidedly difficult and tedious operation. My experience in this case would lead me to say that while the injection treatment of hernia does little or no good, so far as cure is concerned, it does add most decidedly to the difficulties of a radical operation. The occurrence of gonorrhea and epididymitis in a case of this kind presents some very interesting complications. It is hardly necessary for me to say that had I known of the existence of this trouble, the operation would have been postponed to some future day.

DISCUSSION.

DR. LARIMORE:

The paper just read I regard a valuable contribution to the subject of radical cure of hernia. We agree with the author that the operation is both safe and sure, and would go farther than he, by saying that all cases of hernia in children, after one year's treatment with the truss, followed by failure to cure, should be operated upon, thus saving the patient from the constant danger of strangulation and relieving him from the great inconvenience of wearing a truss. We further agree that Bassini's operation is the best, but prefer, decidedly, the kangaroo tendon to any other kind of suture material. A private letter from Dr. W. B. Coley, of New York, says that he has operated upon 306 cases of hernia, with only one death; 250 of these were by the Bassini method, with tendon suture, with only four relapses. These statistics alone are sufficient to corroborate all that has been said upon the safety of the operation and permanent results. Extreme age, with strangulation, is not a barrier; for my last case was a prominent citizen of Mt. Vernon, eighty-five years of

age, with an inguinal hernia of twenty years' standing, followed by recent strangulation. Proper management, promptly followed by operation, combined with the radical operation, has resulted in complete cure, notwithstanding his extreme age, albuminous urine and a chronic bronchitis with violent expulsive cough, requiring elevation of foot of bed to lessen impulse on hernial region during convalescence.

NOTES ON DERMATOSES DUE TO VEGETABLE PARASITES. THEIR RÔLE IN THE EVOLUTION OF MODERN PATHOLOGY.

WILLIAM THOMAS CORLETT, M. D., L. R. C. P. (LOND.), CLEVELAND.

Professor of Dermatology and Syphilology in the Medical School of Western Reserve University; Member of the American Dermatological Association, and of the Dermatological Society of Great Britain and Ireland, etc.

The history of dermatology is the history of medicine; for diseases of the skin, being visible to the eye, were the first to be recognized and the first to receive accurate description. So important were they that a special treatise was devoted to their consideration as early as 1572*. True, it was not original research, any more than are the treatises of to-day, but a compilation of the teachings of Hippocrates, Celsus and Galen, and as such was a valuable contribution to medical literature.

The first departure from the humoral pathology in medicine occurred in 1839, when Schönlein of Zurich, later of Berlin, announced the discovery of the *Oïdium*, afterwards named *Achorion Schönleinii* by Remak, in honor of the discoverer. There were not wanting at the time men of high repute who ridiculed the idea of favus being due to a vegetable parasitic growth. Nor have some more modern writers been willing to accept the germ theory of disease. Sir Erasmus Wilson, as late

*Mercurialis, De Morbis Cutaneis.

as 1881, maintained that the so-called vegetable parasitic diseases of the skin were in reality not due to extraneous growths, but that the micro-organisms found represented the various processes of cell degeneration as promulgated in the pathology of Rokitansky in 1842. Finally, the study of the Hyphomycetes, or fungus family, revealed the Chizomycetes or bacteria, which constitutes one of the main factors in the pathology of to-day.

For half a century the vegetable parasitic dermatoses have been the object of investigation, diversity of opinion and discussion, yet with improved methods and appliances much additional light has of late been thrown on the subject, which with the most successful methods of treatment will comprise what I have to say.

FAVUS

Is an uncommon disease in many countries, and in the United States is only seen in recent arrivals from countries such as Russian Poland, Scotland, France, and Italy, where the disease is endemic. The lesions when well developed are characteristic, and are composed of sulphur-yellow, pin-head-sized bodies situated at the base of the hair-follicles, usually met with on the scalp, although no part of the body is exempt. White, of Boston, has encountered the disease on the glans penis, and Kaposi reported a case of gastro-intestinal disturbance in which the autopsy revealed colonies of favic fungus in the mucous membrane of the esophagus and stomach. As the disease progresses the yellow grain-like bodies increase in size by peripheral development, while the central part becomes depressed; in this way the cup-shaped crusts or *scutulæ* are formed. These when present render the disease easy of diagnosis, and as they are invariably present, unless the affection has well-nigh disappeared by spontaneous evolution, the

recognition of favus need not longer engage our attention.

The Achorion of Schönlein comprises many different forms of mould fungi, which by certain writers, Quinke*, Unna†, and Sabrazès‡, are supposed to be distinct varieties, giving rise to as many forms of the disease. The majority of dermatologists, however, hold to the view that there is but one favic fungus, composed of several elements, and producing one clinical variety of the disease.

TINEA TRICHOPHYTINA

Is a disease of great practical moment, because in its various forms it is often difficult of diagnosis, and because it is a very common affection. Gruby§ of Paris and Malmsten‖ of Stockholm almost simultaneously discovered the parasitic nature of the disease and described the parasite. By the latter the fungus was called *Trichophyton*, which name it still bears. Like the fungus of favus the Trichophyton is made up of mycelium and spores. The former appear under the microscope as long, slender, colorless, usually well-defined threads, which are straight or tortuous, sometimes forked, and vary both in length and width. At times septa are seen, between which one or more pale nuclei are sometimes visible.

The pathology of tinea trichophytina, as well as the clinical picture of the disease, varies according as the scalp, the bearded part of the face, or the smooth surfaces are involved. It is generally understood that these differences may be accounted for on anatomical

* Quinke, Monatsheft f. prakt. Dermat., 1887, Nos. 2 and 22.
† Unna, Monatsheft f. prakt. Dermat., 1893, Nos. 1 and 2.
‡ Sabrazes, Annal. de Derm. et Syph., Nov., 1893.
§ Gruby, Comptes rendus des seances del'Acad. des Sciences de Paris, 1841-3.
‖ Malmsten, Muller's Archiv., 1848.

grounds, but of late, Sabouraud* has described three or more distinct varieties which are dependent on the special micro-organism found therein. Two main varieties are given: the large-cell or true Trichophyton, 7 to 9 m. m., and a small-celled variety, 2 to 3 micromillimeters, which he does not regard as a Trichophyton, but a Microsporon Audouini, first described by Gruby. The large-celled variety gives rise to two clinical forms of the disease: (*a*) mild form, situated on the smooth surfaces, usually during childhood; (*b*) always of animal origin, and when derived from the horse giving rise to a highly pyogenic folliculitis, as in tinea barbæ and kerion of the scalp. A milder form, also composed of large cells, is contracted from the cat, which may be recognized by its superficial situation, giving rise to vesiculation, etc. The small-celled variety, or Microsporon Audouini, gives rise to tinea tonsurans in children, is highly contagious, and is the most rebellious of all to treatment. It attacks only the upper layers of the epidermis, and the hair substance, and does not produce permanent baldness.

Quite recently Mibelli† has verified the plurality of the fungus in tinea trichophytina; he does not, however, accept in full the claims of Sabouraud.

Considering the subject *seriatim*, the lowest form of development is met with when the Trichophyton attacks the general body surface. Following its natural tendency to select structures that have undergone keratization, the corneous layer of the epidermis is involved. It shows little tendency to attack the rudimentary hair-follicles, or to penetrate below the horny layer. Under the microscope the fungus may be clearly seen with a one-sixth inch objective. It is composed of long, somewhat tortuous mycelia with but few spores. It becomes

* Sabouraud, Annal. de Derm. et de Syph., Nov., 1894, and Apr., 1896.
† Mibelli, Annal. de Derm. et de Syph., Aug. and Sept., 1895.

intractable only when it becomes lodged in parts such as the axillæ, the inner surface of the thighs, etc., where heat and moisture tend to the greatest luxuriance in vegetable growth.

In ringworm of the scalp the hair becomes early involved, leading to disorganization of the hair-shaft and penetration into the follicle. Under the microscope the stumps of hair will be found thickly infiltrated with spores, while few mycelia are seen. The obstinacy of the disease depends upon its penetration below the surface.

When the beard is invaded there appear to be two distinct phases of the disease, which some suppose to be distinct varieties. The first involves the superficial strata of the scarf-skin, forming rings, and reddish, well-defined patches, which yield readily to treatment; while the second is an intractable disease, penetrates deeply into the follicle, and attacks the bulb of the hair often before any impairment of the free shaft takes place. It is a question in which opinions differ whether or not these two phases of the affection are due to the same fungus. Clinical observation would incline to the belief that there are two distinct varieties of tinea barbæ, the one attacking the surface, corresponding to tinea circinata, the other attacking the fundus of the follicle, corresponding to the variety known as kerion of the scalp, which is a suppurative folliculitis, due to the presence of the Trichophyton. Onychomycosis is comparatively infrequent, and difficult of diagnosis because it does not differ in appearance from disease of the nail caused from psoriasis, eczema, lichen ruber, or traumatism. In onychomycosis, however, the nail is usually primarily involved, or occurs in one having some form of ringworm elsewhere. It makes its appearance at the side of the nail underneath the fold of the skin, the nail becomes dark, lusterless and brittle, fissured and broken.

One or more nails may be subsequently involved, seldom all the nails of the hand, while in diseases of the nail supervening on psoriasis, etc., all the nails are usually affected. In making a diagnosis, scrapings from the diseased part of the nail should be washed in ether, dissolved in liquor potassæ, and placed under one-sixth of an inch power, when the fungus may be readily seen.

TREATMENT.

The management of all the vegetable parasitic dermatoses may be considered under one heading, because the principle of treatment is the same in each. True, some parasites are more easily destroyed than others, yet the main difference unquestionably depends upon the depth to which they penetrate. In all the first care is to prevent the disease from spreading to other parts of the body, or to those unaffected. Thus at the onset it is advisable not to shave the parts affected lest new foci spring up from auto-inoculation, but when occurring on the bearded part of the face or scalp, the hair should be closely clipped over the diseased area, extending fully half an inch beyond the margin. For this purpose Crocker* and others recommend an impermeable dressing of traumaticin or flexible collodion in which one of the parasiticides, to be spoken of later, is incorporated. The act of washing, also, is a source of danger. As a precaution it is well to bathe the parts with some antiseptic substance dissolved in alcohol, such as boric acid, carbolic acid, or the bichloride of mercury. It is necessary, also, from time to time to change the lining of caps and other articles of clothing that come in contact with the affected part. The comb and brush should not be used, but instead the hair of the scalp in children and the beard of adult males should be worn closely clipped.

* Crocker, Diseases of the Skin, London. 1893.

When the disease is situated superficially, as in tinea circinata and in the early stage of tinea barbæ, attention to cleanliness, together with the application of some mild parasiticide, such as sulphur, boric acid, or a saturated solution of hyposulphite of soda. In this class comes also tinea versicolor, and erythrasma. When the parasite has penetrated more deeply, involving the lower strata of the epidermis or follicular openings of the hair, as in tinea favosa, more energetic measures should be adopted. Here all crusts must be removed, by first soaking in salicylated oil (gr. ij to castor-oil ℥j), or, what I have found especially serviceable, petroleum.

It has long been known that substances having an irritating effect on the skin are efficient as parasiticides. It is now well understood that with many their action is indirect, as it is the subsequent inflammation with the formation of pus which changes the soil in such a way as to be inimical to the life of the fungus. Again, it appears that pus itself is a potent germ destroyer.

Thus croton-oil, tar, mercury and chrysarobin are efficient in this group. Chrysarobin is undoubtedly one of the best parasiticides, although care must be taken when using it on the scalp or face, lest it extend to the eyes, or cause a too severe dermatitis in delicate skins. Another disadvantage is its property of staining. It may be used from ten grains to a drachm, to the ounce of vaseline or traumaticin. The latter forms an impermeable covering and prevents the drug from extending to the unaffected parts.

When the root of the hair is involved, as in tinea tonsurans, tinea barbæ, etc., applications which act only on the superficial strata of the skin are not sufficient. Either epilation must be persistently followed or the parasiticide must penetrate deeply into the follicle.

Various methods and devices have been used for this purpose, such as galvanic current of electricity, atmospheric pressure, etc., although according to my experience, the best is a vehicle composed of the following:

℞ Ol. amygdalæ dulcis, . ℥ij.
Lanolini, *adde* . . . ℥j.

On account of their osmotic power, the oleates are highly esteemed in the treatment of deep-seated parasitic growths. Of these copper (℥j to ℥j) is highly spoken of by some, while twenty per cent. of the pure oleate of mercury to the ounce of the vehicle above mentioned has given me the best results.

In purulent folliculitis, as in tinea barbæ and kerion of the scalp in children, as previously stated the suppurative process will of itself eliminate the fungus. Certain accessories are, however, required to complete the cure, such as epilation in which all the diseased hairs are removed, and absolute cleanliness lest the disease extend to the sound parts, thus propagating itself indefinitely. In this latter process baldness follows from destruction of the hair papillæ.

In the treatment of onychomycosis, the diseased part must first be removed, either by scraping, or by the complete removal of the nail itself. When the seat of the disease is reached applications of oleate of mercury or chrysarobin as above given may be used. Liquor potassæ is also of service. It may be applied with lint, after which the nail may be readily scraped away. Sulphurous acid, or the hyposulphite of soda ℥ij to the ounce of water, may also be applied with lint and covered with oiled silk. Whichever plan is adopted, care must be taken that the parasiticide comes directly in contact with the diseased part.

INTESTINAL OBSTRUCTION: SOME DIAGNOSTIC POINTS AND TREATMENT.

M. STAMM, M. D., FREMONT.

The cardinal symptoms of ileus or intestinal obstruction, such as pain, vomiting (fecal), constipation, tympanites and anuria, have been known for a long time. Very little has been added of late from a pathologic-anatomical standpoint. Our hopes, which were entertained with the advent of the antiseptic era, that with more timely and aggressive methods better light would be thrown upon the subject which would have a tendency to reduce the mortality, were not realized in a measure we had reason to expect. The general practitioner has not changed his method of treatment, and he is still at sea how to meet the various conditions. This is, no doubt, due to the inability of making a correct anatomical diagnosis, or, in other words, to bring certain symptoms into definite relation with the nature and seat of obstruction. What we have so far gained in this line is principally due to experimental science during the last decade.

Some of our text-books of recent date draw attention to the different forms and location of tympanites. If the latter is general, and we can trace the colon on both sides, we may infer that the seat of obstruction is at the lower part of the sigmoid flexure or rectum. If the left

hypochondriac region is less distended than the right, we may find the trouble in the transverse colon. If both hypochondria are empty and we find the tympanites in the umbilical region, the seat of obstruction may be expected in the cæcum or lower part of the ileum. If the whole abdomen feels empty and there is eructation and tendency to vomit, but no real vomiting, we may look for trouble high up, at the duodenum or near the stomach (strangulation of some intestinal portion in the foramen of Winslow). If the stomach alone is inflated and the intestines are empty, we may have pyloric obstruction; in such case the symptoms resemble those of cholera in the algid stage, less the diarrhea.

A more definite symptom, which refers either to strangulation or ileus in their earliest stage, has been experimentally produced and observed by Schweninger. It is the circumscribed meteorism located in the strangulated coil where it assumes a fixed or anchored position. This is caused by the impeded circulation in the strangulated portion, and by the putrid decomposition of its contents and want of absorption of the gas. Von Wahl has taken pains to test the clinical value of this symptom, and has reported several cases proving its great importance in making an early diagnosis and furnishing an indication and guide for operative interference.

To this has been added another symptom by Schlange and Obalinski, which is the increased peristaltic action of the coil above the seat of obstruction. Obalinski, on the strength of these diagnostic factors, saved by operation 9 out of 19 cases of torsion of the sigmoid flexure, nearly 50 per cent., and thinks that 80 per cent. might be saved if operated upon before the fourth day. He further adds that if we notice with the above symptoms a metallic sound, caused by the thin fluid contained in the distended coil on percussing or shaking it, and we

have no vomiting or only at a late period, we have a typical picture of torsion of the sigmoid flexure. His clinical experience would point to the fact that increased peristaltic action can be more relied upon in strangulation than local meteorism.

Another symptom, which of late has been observed, is the increased excretion of phenol and indican through the kidneys. They are the products of albuminous decomposition, and are found more in obstruction of the ileum and in peritonitis; they seem to be absent in obstruction of the colon. Although this phenomenon cannot be accredited as a definite diagnostic factor, it presents some clinical interest and is worthy of further consideration. It is generally our wish to know whether peritonitis has set in or not; here are the absence of peristalsis and borborygma, inflation of the bowels and rise of temperature, the most reliable symptoms. In circumscribed peritonitis these symptoms are not so pronounced; the intestines are not so fully distended, and there is still slight gurgling and peristaltic motion. But in diffuse peritonitis, the distention reaches its utmost capacity, the intestines are as silent as the grave, there is complete intestinal paralysis.

The seat of pain may also give us a hint in regard to the location of obstruction by bands. I have noticed this in several cases, especially so in a girl thirteen years old, whom I saved last March by an operation. After she was under partial anesthesia, she would, on pressure, still evince pain in the region where I afterwards found a band about one inch in width stretched over the sigmoid flexure. The contour of the colon and its peristaltic action could also readily be seen under complete anesthesia. In ileus the abdomen is generally not so painful on touch, often even relieved by pressure; patient is not so much afraid of changing his position as in peritonitis, where the slightest touch or movement

causes pain; temperature is generally normal, or even subnormal at the beginning. Exudation of fluid into the abdominal cavity can sometimes be detected after twelve hours in severe strangulation.

The addition of these new clinical phenomena has, of course, not made the diagnosis definite in every individual case, but still they seem to prove of great value in recognizing the seat and nature of obstruction in its early stage.

It may serve a practical purpose to divide obstruction into *dynamical* and *mechanical* ileus. We know that, besides secretion and absorption, the intestines have by virtue of their muscular contraction the power to expel their contents. This contraction may be impeded either through lack of motor force of the intestinal muscles or through some obstacle which may mechanically obstruct their lumen. In the first instance it is designated as dynamical and in the second mechanical ileus. In dynamical ileus we always have paralysis of some smaller or larger portion of the intestine. In rare cases this may be caused by disturbance of the circulation after resection or herniotomy, embolism of the mesenteric arteries or spinal diseases; more frequently, however, it is caused by peritonitis, acute or chronic, circumscribed or diffuse.

A more varied and complicated picture is presented in mechanical obstruction. We may divide this into ileus by *strangulation* and by *obturation*. The former is caused by some bands, diverticle or appendix, which may constrict a portion of the bowel with its mesentery, by some internal hernia into a slit of the omentum or mesentery, by torsion or volvulus. Ileus by obturation is caused by foreign bodies in the intestinal canal, *i. e.*, gall-stones, tumors, polypi or cancer, also by cicatricial stricture or by kinking above some point of adhesion. Some clinical features have to be especially

considered in the diagnosis of this condition: (1) Pain is not intense and continual in the initial stage. (2) Collapse is generally absent or much less frequent than in strangulation. (3) The inflated coils and their peristaltic movement can be readily detected at the seat of obstruction in the distended abdomen. (4) Some trouble in connection with the bowels has generally preceded the onset of ileus.

Invagination or intussusception occupies an intermediate condition between strangulation and obturation, as it may at times only lead to temporary obstruction, in other cases to gangrene of the bowels. It generally occurs at an early age, and the symptoms of pain, nausea, vomiting, rectal tenesmus, and discharge of blood or mucus from the rectum, come on suddenly. We detect in connection with these symptoms a cylindrical tumor in the rectum or abdomen, one pole of which appears to be fixed to the spine, the other is freely movable. If the lumen of the bowel is fully obstructed, we notice also increased peristalsis before symptoms of peritonitis have set in.

I must repeat that the above described symptoms of obstruction can only be detected in the earlier stage. The necessity, therefore, should be impressed upon the general practitioner to look for them at his first visit just as much as he would examine for hernia at their usual openings.

Obalinski has furnished a list of questions that we should have in our minds when we examine a patient with intestinal obstruction. It might be of advantage to append them here.

I. ANAMNESIS.

1. How long is patient sick?
2. Did it come on suddenly?
3. Is it the first time or recurrent? In the latter how, and how often?

4. Whether patient has had typhoid fever, dysentery, peritonitis, chronic constipation, renal or biliary colic.

5. Was it preceded by a cold, traumatism, improper diet or hernia (reduced)?

6. Whether pain is intermittent or constant.

7. Whether pain in the small of the back.

8. If a woman, about menstruation and pregnancy.

II. PHYSICAL EXAMINATION OF PATIENT.

9. About pulse and temperature.

10. Strength of patient.

11. Size and shape of abdomen. Whether empty, distended, globe-shaped or irregular.

12. Whether contour of anchored coil cannot be detected on the surface.

13. Whether resistant on pressure, or deep tumor.

14. Whether increased peristaltic action.

15. Whether on touch the whole or only some parts of the abdomen are painful.

16. Whether fluid can be detected on percussion in the abdominal cavity.

17. Whether on percussing or shaking we hear a metallic sound.

18. Vomiting, when and how often? Whether feculent.

19. Whether hernia. The whole median line should be examined, as hernia are often overlooked in that region.

20. Whether micturition is normal or disturbed.

21. Whether there is blood or mucus in the rectum and some hard resistant body.

22. Any new condition found during operation should be noted and connected or compared with our former diagnosis.

TREATMENT.

If we succeed in making a correct anatomical diagnosis, we should have no insurmountable difficulty in adopting the proper course of treatment. Internal clinicians claim that so far their mortality in obstruction is not greater from opium treatment than others have with surgical interference. This may be so, but it should not be forgotten that a definite diagnosis of the seat and anatomical nature of obstruction has so far been rarely made, and surgeons have only been called in at a late hour to share with the physician the responsibility of delay or shoulder it themselves alone.

From consideration of the anatomical conditions, as well as experience, we can mention the use of cathartics only to condemn it. In peritonitis, rest of the bowels is, no doubt, the most important factor, and I think no physician would expect benefit from cathartics in hernia or internal strangulation. Irrigation of the bowels with large quantities of water, turpentine or ox-gall added, has never done harm in my hands and I think very much good in some cases. Over twenty years ago I gave injections to two boys; one had sixteen solid stools within three days, the other fifty-four stools within ten days, with peritoneal exudation up to the umbilicus and abscess in the right iliac region. After I detected slight fluctuation I opened the abscess and emptied about one quart of pus, and, therefore, unconsciously operated at that time on a case of appendicitis.

I think with rest, diet and small doses of opium, a great many cases of circumscribed peritonitis fare well, and even some cases of diffuse peritonitis will recover. If the presence of pus can be diagnosed, an incision in that region and not in the median line is indicated.

A few weeks ago I was called to see a man, about twenty-four years old, who for ten days presented symp-

toms of appendicitis. For the last thirty-six hours he suffered from obstruction of bowels and vomiting. There was dullness in the right iliac region, and absence of borborygma, but especially so to the right of the bladder region, where it was quite painful on touch. In the left iliac region there was slight dullness, some intestinal sound on percussion, and slight gurgling on auscultation could be detected. In the rectum I found an elastic tumor compressing its lumen. I decided to make the incision at the seat of pain and dullness, to the right of the bladder. After incision I worked my finger to the region of the cæcum and found about one teaspoonful of pus, but not more; on further examination, working my way then in between the intestines and bladder, I plunged into a cavity from which I emptied over one quart of pus.

In cases of obstinate vomiting, lavage of the stomach promises great relief. In April, 1878, I used this method in a case of obstruction high up, where vomiting was almost incessant for several days; the effect was like magic, and patient improved immediately. I do not mention this as a claim of priority, since I never published the case, thinking it might have been a mere coincidence. Moreover, I was not as fortunate in having a second case in rapid succession to verify the result as had Prof. Kussmaul, who, six years later, published the report of two cases which were made ready for operation, and to clean out the stomach were submitted to lavage, which gave immediate and permanent relief. The only objection to this method is that in some cases it may only have temporary effect, and lull us into false security, which might induce us to let the best time for an operation pass by.

In regard to diet, iced milk with a little brandy, or small doses of champagne, may be given at longer or

shorter intervals; for thirst, small pieces of ice saturated with brandy.

Where the heart begins to fail, and to cover the great loss of fluids from the tissues, infusion of salt water often proves of great benefit.

Where meteorism becomes so intense as to call for interference, puncture of the bowels with a hypodermic or aspirator needle has been recommended. In a case about twelve years ago, where the abdomen was enormously distended after about two weeks of obstruction, I introduced an aspirator needle into the ascending colon, ostensibly for the purpose of inducing euthanasia, but with the result that the patient has been in the best of health since.

In cases where we are afraid that the contents of bowels might escape through the puncture opening, the establishing of a fistula would not be more dangerous, but, no doubt, of greater advantage. Where we have a patient who is taken with sudden pain in the bowels and feels very sick, with the general signs of obstruction, we should look for local meteorism and increased peristalsis. If the distended coil is large and visible, very little doubt can exist as to its being a case of strangulation or volvulus, and we should resort to laparotomy at once. Where only a small coil is incarcerated, or where the seat is more toward the spine, or down in the pelvis, so that it cannot readily be palpated, such cases should be watched very carefully, sometimes for days, and as soon as increased peristalsis or local meteorism can be detected, be operated upon at once. Here we must be especially careful not to obscure the symptoms by the indiscriminate use of opium. If we overlook the above symptoms and allow the case to go on, we will in due time find the symptoms of diffuse intestinal paralysis or peritonitis developed,

where then it is better to abstain from any severe operative measure.

Where there is already considerable distention of the abdomen, but you can still detect some coil on careful palpation and peristaltic action on percussion, we may yet venture an operation, although prognosis is quite gloomy. In such operations the incision should be made quite large so as to get promptly at the seat of obstruction. This step is very much shortened by looking for the empty coil below the constriction, and in case of necessity the bowels may be eventrated.

In case of volvulus, local meteorism is a very important symptom. Obalinski says that we generally find a dome-shaped prominence about three to four inches long and about the same width, which on percussion gives a tympanitic sound, is resistant to touch, becomes more visible during a seizure of pain. If to this is added the metallic sound, and there is no vomiting or then at a late period, we have the characteristic picture of torsion of the sigmoid flexure. Operation in volvulus should not be delayed very long. In some cases it may be necessary to puncture the intestine or make an incision to empty its contents before we succeed in reducing it.

The question how to prevent its recurrence should also engage the surgeon's attention. Senn's method of shortening the mesentery by folding it upon itself in a direction parallel to the bowel, and maintaining it in this position by a few catgut sutures, has proved of practical value in his hands. Roux, of Lausanne, has in two cases stitched the mesentery near the intestine to the parietal peritoneum. Some surgeons have even resorted to resection of the intractable coil.

In obturation our steps have to be guided by the existing cause and condition. If a foreign body causes the obstruction, its extraction by incision would be the proper procedure. In case of stricture, anastomosis or

resection are indicated. About six years ago I made an anastomosis with my cartilage plates for traumatic stricture of the ileum, in a boy seven years old, with good, permanent result. (*Med. News*, Jan. 10th, 1891.) If due to compression by a tumor, enterotomy or resection are the preferable methods. Last summer I operated at a very late period (three weeks) on a case where the colon and abdomen were enormously distended. A retroflexion of the uterus prevented me from examining the lower part of the bowels; I was, therefore, not positive whether it might be the principal or sole cause of obstruction. I hesitated between making an incision in the median line or in the right iliac region, where, if need should be, I might establish an artificial anus at once, but finally I decided for the median line. After the incision was made the bowels forced themselves violently through the opening, and were so brittle that they tore in four places, so that I was obliged to make a resection. On reaching the pelvis I found a circular cancer of the colon tied down to the promontory, the uterus below acting as a ball valve. Patient was so exhausted that she died about ten hours after operation. Could I have foreseen the true condition I would have made an inguinal colotomy, but I did not find the glassy mucus in the rectum which Schlange considers a characteristic sign in cancer of the rectum or colon.

In cases where there is some doubt about the nature and seat of obstruction, enterotomy or a fecal fistula would hold out the best temporary hope. In intussusception or invagination we may at first try injection of large quantities of water in the genupectoral position, or insufflation of air into the rectum. If the invagination is low down, massage, sponges attached to a probe or stem, or the finger alone, may be employed for its reduction. Should all this prove of no avail, disinvagination by laparotomy will have to be attempted; and where this

method fails, or where gangrene is aleady present, resection would be the only expedient.

DISCUSSION.

DR. REED:

It seems to me a subject of this kind should not be closed without a more or less full discussion. I am of the opinion this paper is one of the most important upon the program of this meeting. Intestinal obstruction is occurring all the time, and the diagnosis of intestinal obstruction is generally so difficult and so rarely understood, that it makes it of greater importance. In cases of malignant disease the symptoms may have existed for a longer or shorter period before making the diagnosis of malignity; or in cases of hernia, where the hernia is apparent, the cause of the obstruction can be ascertained. But how often is it with us we have obstruction of the bowels, and we have not the slightest idea of what the cause is, and it is utterly beyond the ken of our observation to come to a satisfactory conclusion as to the cause?

All of us are liable to see those cases. I had one come under my observation, which I shall not forget, in which I was called when the women was apparently in a dying condition. A cystic tumor was not thought of by the attending physician. I made no examination of the abdomen, but told the attending physician the abdomen should be opened and then possibly we could ascertain the cause of the trouble. And with the possibility of finding out the cause, possibly with a favorable result, the abdomen was opened, and a cystic tumor came into view. On passing my hand down I found adhesion to the colon. These adhesions were broken up, the cystic tumor removed and the patient recovered. I have had some other cases come under my observation, in a practice of some forty-five years, that I never knew the cause of, and in some cases I wanted to make an exploratory operation, but the physician or the patient refused and the patient died.

I listened to the paper with a great deal of interest. I approve of the recommendations of Dr. Stamm: In cases where you cannot very soon remove the obstruction

by medication, per rectum or stomach, resort to the abdominal incision. Only yesterday I saw the report of Dr. Marcy's paper, of Boston, read at the Atlanta meeting, in which he said seven cases came under his recent observation, five of which died. We all know Dr. Marcy and his great ability as a diagnostician and operator. Still only two of these cases recovered.

I want to impress, if it should be necessary, upon those listening to me, the importance of abdominal incision. The importance of it is very great. I do not think we are doing our duty by these cases, when they are not relieved by the ordinary means, if we do not insist upon abdominal incision. I have made up my mind I would withdraw from the case if such a request were not granted. There are occasionally cases, when the obstruction is low down in the bowel, which may be relieved by irrigation in large quantities, with the medicinal substances mentioned in the paper. But those cases are the exception. The obstruction is not usually relieved in that way, and I think it is the observation of all of us that only a few cases of intestinal obstruction recover under that treatment, and that makes abdominal incision so important. It is not a difficult or dangerous operation to make the abdominal incision, if it is done with asepsis in the proper way, and then we can introduce the hand and often find the trouble. This is not always followed by relief, but it is more likely to be followed by relief than any other mode of treatment. I have had some cases, which I have let go on because they objected to operation, and they have died on my hands, and I feel in those cases I have not done my duty because I did not withdraw from the cases and let them die under the care of somebody else.

I arise principally for the purpose of endorsing the paper.

DR. WARD:

I wish to make a short report of a case, which is a little unique, perhaps. It was a case of intestinal obstruction in a woman, caused by her swallowing pins some twenty-five years before. She was quite fleshy, but you could readily make out a circumscribed tumor a little to the right of the umbilicus. I was called for

complete obstruction of the bowels. I gave a cathartic, with large injections of water, and she passed quite a number of pins. That was the first she knew what was the cause of the trouble. On inquiry, she told me that when a girl working out, in pinning clothes on the line, she had her mouth full of pins and someone caused her to laugh and she swallowed the pins. A few months after this visit a vagino-rectal fistula put in its appearance, a short time afterward a vesico-vaginal fistula, and a short time after this she observed the point of a pin just above the pubic bone, and I took it out with the forceps. Then afterward a pin made its appearance over the ileum, and within a few months, eight pins came out in various parts of the body. In a few months an active diffuse peritonitis carried the woman off in a few days. No autopsy was allowed.

This I mention as an unique case of obstruction and one in which it would be quite difficult to make out the exact cause, were it not for the pins.

DR. HERRICK:

This paper is of great interest, as it involves organs of primary importance to the individual during life. I desire to express my gratification as to the paper, and of course in expressing my gratification I may be excused if I offer some suggestions or criticisms. In this paper we have discussed intestinal obstruction. Now, we understand the intestines are some twenty-five or thirty feet in length, and certain portions of this canal are especially prone to obstruction. The obstructions may vary in their nature and cause. An obstruction may occur from intussusception, volvulus, fecal accumulations, or there may be a hernial obstruction. The paper, it seems to me, is not quite explicit in defining the disturbances that may cause obstruction. Then there may be traumatic obstruction, as the gentleman has mentioned, from substances passing into the canal. In other cases, that come on gradually, there may be no means of determining definitely the cause.

I want to state that it is my belief that idiopathic obstructions are slow in their approach, that there must have been going on for a greater or less time impair-

ments of the secretions, and consequently the accumulation of hard fecal masses in the intestines.

Again, I wish to mention what has seemed to me to be a cause of intussusception—that is, fright. Certainly in two cases in children I have observed obstruction from intussusception from sudden fright. So much for the different causes of obstruction. They are each of them worthy of consideration. I have no controversy regarding the surgical or therapeutic treatment. Many require operation after the therapeutic means fail. Of course, then, the intelligent physician or surgeon must be called to do his duty.

The doctor speaks in the paper of the bed. Now, I do not know of any one class of cases requiring more imperative orders to rest. Nature will do very well if you give her a chance. I speak of this as one of the first considerations. Rest from food as well as rest in bed. Patients never die of starvation. Every person has an accumulation of adipose tissue sufficient to keep him eight or ten days without food if water is plentifully given. When the Doctor speaks of giving the patients iced milk, I simply suggest the question whether that is wise treatment. The iced milk, in the first place, must be warmed before digestion can go on. In the second place, the cheese curd must be broken up and digested. It is contrary to the idea I first insist upon, as to absolute rest. I would call the Doctor's attention to that point as one that requires some consideration. Clear broth and water I would give liberally.

DR. ROSENWASSER:

Of the two grand divisions, I believe surgeons will generally find the mechanical the much more frequent source of obstruction and the more hopeful condition for relief. In a case of obstruction due to an enlarged gall-bladder, supposed first to be an intussusception when operated upon, there was considerable vomiting, absolute obstruction of the bowels, and a large tumor between the ascending and transverse colon distinctly to be felt. On operation we found the gall-bladder filled with perhaps a half a pint of bile. In another case, in which the patient was brought to the hospital almost moribund,

the obstruction was due to a cicatricial band obstructing the ileum near the cæcum. In another case the bowels seemed obstructed by an ovarian tumor. It was not an obstruction at all, but a cyst with twisted pedicle, which gave similar symptoms to those of obstruction. A recent case within my knowledge died from invagination of the bowel due to a tumor within the intestine, a small polypus, which by its weight had gradually invaginated the intestine. The case was dilly-dallied along until the patient died. It was found on autopsy the case could have been easily relieved. So that, altogether, I feel these cases, unless relieved by injections or lavage of the stomach, should be operated upon early, because in nine cases out of ten there will be found some mechanical cause which can be removed surgically.

DR. ENTREKIN:

This question of intestinal obstruction is a more serious one than we are wont to consider it. There is scarcely a man, doing a consultation business, who does not meet with one to half a dozen cases of intestinal obstruction every year. A good many of them die, and the reason a large proportion of them die is because there is too much effort made to treat them medicinally before the surgeon gets an opportunity to operate upon them. I believe the doctor's proposition that we should make an exploratory laparotomy on all uncertain cases, is infallibly true, and then we will save a great many individuals lost to-day to society because of the fears entertained.

I recently saw a lady who had had obstruction for a number of days. I thought it was too late, but made an effort. We placed the patient on the operating-table, and found behind an old adhesion, forming an obstruction across the bowel, twelve inches of intestine. The bowel for that distance was perfectly gangrenous, and a portion of the mesentery was in a dark and gangrenous state. The upper portion of the bowel, to within three feet of the ileocæcal valve, was filled with liquid matter, and so difficult was it to bring out the dead portion of the intestine because of adhesions that I made an incision into the intestine and poured

out the thin liquid matter, instead of removing the contents through the resection, and then removed the diseased portion of the bowel. But the patient died. I have no doubt, gentlemen, but an earlier diagnosis and operation would have been successful. In the early stages it would only have been necessary to release the band and the obstruction would have been relieved.

I have now under observation a young woman twenty-three years of age. There is no trouble below the ileo-cæcal valve, but above the ileocæcal valve somewhere there is to be found quite a fullness, and an operation must be made or the patient will die. I am particularly interested in the case because it is unusual for such an obstruction to occur in a young person.

DR. STAMM:

I am grateful for the kind criticisms of the speakers. I am sorry I could not go into the anatomical causes of obstruction of the bowels, but I understood the papers were to be read within the limit of ten minutes and I knew several volumes had been written on obstruction of the bowels. I gave only sufficient points to enable us to make a diagnosis. What especially induced me to write the paper were two features of diagnosis. One was the increased peristalsis, and the other local meteorism at the seat of the fixed coil in case of strangulation or volvulus. This has been observed in a number of cases, and should be looked for at the earliest point of examination. As to iced milk, I don't recommend it as a routine treatment. In some cases it does some good; if it don't do any good, I stop. I have never known it to kill anybody, but often it is comfortable to have something in the mouth. If the Doctor were to have intestinal obstruction, I am certain he would like to have something in his mouth, if only a little tea or something stronger than tea.

RATIONAL MEDICINE.

H. B. Gibbon, M. D., Tiffin.

My desire in bringing this subject before you is to awaken some thought regarding the present status of the practice of medicine, which seems to be rapidly drifting toward empiricism. Permit me first to call your attention to the application of remedies to disease. After having examined your patient and made your diagnosis, would it not be the most reasonable and rational thing to do to write your prescription for this specific ailment, and make it to conform to the peculiar characteristics of your patient, or compound your remedies, rather than to take from your shelf a bottle containing a compound and apply your diagnosis to the remedy most convenient?

In these days, when our shelves are stocked with tablets, pills, lotions and compounds, labeled, and for convenience many of them have printed upon the reverse side of the bottle instructions for dispensing, I am persuaded that we grow careless because of these conveniences. I do not wish to be understood as finding fault with our enthusiastic pharmacists, for they are affording a convenience to the busy practitioner, and at the same time they are establishing a lucrative business for themselves, and also furnishing very many palatable preparations to take the place of the nauseating compounds, both as to appearance and taste, which many

of our physicians have acquired not an enviable reputation for dispensing. The question I wish you to answer is, do you derive the same results from your prescriptions in hastening recoveries and curing disease as you did when you compounded your own prescriptions or relied upon your home pharmacists?

As we invoice our stock of drugs we find something like the following, only differing somewhat as to the fad of the physician: Anti-Rheumatic, Anti-Dyspeptic, Anti-Neuralgic, Anti-Malaria, Antitoxine, Laxatine, Cerebrine, Phytoline, Pinoline, Anaemiol, Cardine, Diuretine, White Pine Expectorant, etc., etc., *ad infinitum*. Each of these doubtless possesses therapeutic properties of some merit, and many of them, if we are to form an opinion by some of the remarkable results gotten from their administration, to which our attention is directed by means of extracts (with which our tables are laden and our waste-baskets filled) from articles taken from some of our medical publications, or from reports written for the purpose of setting forth the superiority of some pharmacist's products over all others. From these reports we may reasonably think and believe that they are in possession of some medicine possessing miraculous powers for healing, and I fear that we as a profession are too apt to follow after some of these *ignes fatui* in our desperation, in some of the most trying circumstances, and possibly waste important time in which we might benefit our patient more by rational treatment.

I think after thus hinting at some of the tendencies of the times, we may profitably pursue the other study of physiological or "rational medicine."

The practice of physic presupposes the existence of a condition of the system at variance with the natural, which we designate disease. Then disease is a term used in contradistinction with the other condition, which we call health. Thus making health the basis

for all further investigations, let us understand what constitutes health. This organism of ours, so complicate in construction, yet so perfect and complete, with its system of reservoirs and sewers, in its original plan of working is competent to maintain that equilibrium. When all the organs are performing their functions of nutrition and elimination, with physical and mental exercise, so that, as a result of metabolism of tissue from such activity, and resulting from chemical change which food passes through in the process of digestion and assimilation, there is generated heat, which measured by the thermometer registers about 98.3°, which is considered the normal standard for body temperature; the circulation of the blood, the force and rapidity of which is indicated by an average heart-beat of seventy-two pulsations per minute; while the supply of oxygen taken in through the lungs, necessary to properly oxygenize the blood, is furnished by an exercise of the lungs in making from seventeen to twenty respirations per minute. This act is more directly under the will-power of the individual than any other normal function, being influenced also by the clothing and position of the person, as position and clothing may interfere with the free act of respiration by mechanical hindrance to the freedom of the action of the muscles of the chest.

These functions, all considered, constitute that normal condition, or "health." Therefore any departure from this standard, indicated by disturbed functions of any or of all of these organs of the body, manifesting itself by symptoms characteristic of its influence over the body, caused by the retention of excreta which acts as a poison and will produce its toxic effects, may result in death, unless functional activity be restored, so that the poison be eliminated. Thus, it appears to us, the great importance of keeping normal functional activity of those organs which are so essential to health.

In the normal condition, there are very few if ever the most virulent poisons within the scope of our present knowledge but that the system will tolerate, if they are introduced into it within the limits of Nature's provision to eliminate. But if there is not excreted, but only cast into the common sewer of the body, we may have saturation and an accumulative effect, which is slow in its manifestation, but is certain, when manifested, to prove fatal as the same toxic effect resultant from injecting into the system a small dose. The symptoms depend upon the intensity of the poison used, ranging from the merest manifestation to absolute dissolution and death.

We have not time to speak of the great importance which each organ bears to the system as a whole or in detail, but upon the integral proposition, demonstrated, whatever affects one of the component parts of any organ or system of organs, affects the whole body; therefore it is as important to the maintenance of health that the kidneys perform their function as that the bowels should be kept active in the elimination of effete material; and of just as much of a necessity for the skin to perform its function in the economy as that the lungs should theirs.

Nature has, however, made wise provisions, in that we may for a limited time shift responsibility and increase the activity of other organs for a brief period to relieve some other, that they may repair damages resultant from neglect or ill use on the part of its possessor. Yet, while this is being done, we have a deviation from the standard, health, for all organs are not working in perfect harmony. Therefore we are to take into account clothing, food, and that the fatigue resultant from exercise of both body and mind should be recuperated by nature's restorer, sleep.

If these things be of importance in health they are doubly of importance in disease, and we ought not to

lose sight of them in our eagerness to find a medicine that will be palatable and convenient.

There is no other set of organs about which the physician makes—possibly through force of habit—more frequent inquiry than he does about the action of the kidneys. If the secretion be scant, he is very likely to prescribe Diuretine or some other stimulant to the action of the kidneys, and in many instances doubtless fails to investigate as to whether the patient is taking a gill or a gallon of water in a day; whether the increase in specific gravity of the urine and the change in color be due to deficiency in quantity of water ingested, or an absolute increase in solids eliminated by the kidneys; or is the increase in specific gravity due to the fact that the kidneys are performing the function of some other organ?

The solutions of these problems are of no little importance when it comes to the application of remedies, and if we do not settle these points before prescribing, we stand about equal chances of doing our patient injury to that of benefiting him.

If the skin be inactive, and the quantity of liquid ingested be increased, there must certain conditions result. The kidneys and the bowels must have increased activity, the quantity of liquid ingested be diminished, or the body becomes overburdened, and dropsy in some form supervenes. While on the contrary, should the ingested liquid fall below the normal, or that which is necessary to physiological functional activity of the organs, we suffer from retained excreta, and the organs, because of their disturbed function, are prone to take on a diseased condition. Thus, disturbed functional activity, followed by disease, and a system deluged with that which ought to be eliminated, becomes a stagnant pool filled with micro-organisms, which are the manifestations of disease. As so many toxins, they manifest themselves by their influence over the nerve centers, and

we find elevation of temperature and a corresponding influence upon the action of the heart, the action of the skin, etc., etc., if the accumulation of the poison be not too rapid, so as to paralyze the nerve centers, as by shock. The intensity of the poison is measured by the elevation of temperature and the rapidity of the pulse. The higher the temperature runs, the graver the malady; the more rapid the pulse, the greater the depressing influence of the poison upon the nerve centers.

Thus, gentlemen, we would reopen a line of investigation, which if we are content to follow, not only as regards the kidneys but through all the excretory organs of the body, will furnish us rich fields for investigation, and place us upon the right course for the rational practice of medicine.

The important factors in health are exercise of both body and mind within the laws of consistency with our environment; restoring by sleep; food of proper consistency and quality, regularly taken in sufficient quantity to compensate for the wear and tear of exercise; perfect digestion and assimilation; an activity of the excretory organs to eliminate the debris resultant upon functional activity; with cleanliness, for the skin cannot perform its function when obstructed by filth. If these be the laws in health, he who regards them in disease does more towards placing his patient on the road to recovery than does he who does much speculating in the later fads in medicine, and our remedies will be more effectual, while our shelves will be relieved of the weight of remedies prepared for specific diseases.

RESEARCH INTO THE TECHNIQUE OF LARYNGEAL OPERATIONS, WITH REPORT OF FOUR SUCCESSFUL TOTAL EXTIRPATIONS.

G. W. CRILE, A. M., M. D., CLEVELAND,

Professor of Physiology and Principles of Surgery, The Cleveland College of Physicians and Surgeons; Visiting Surgeon to Cleveland General Hospital and St. Alexis Hospital.

INTRODUCTION.

Having noticed in the literature of the subject that at the moment the rubber bag of the canula of the Trendelenberg apparatus was inflated, occasionally alarming cyanosis followed; and further having noticed in their reports, that surgeons have encountered sudden changes in the heart's action and the respiration during the final removal of the larynx; and especially having observed the latter striking phenomena in my own operations, a research was undertaken to discover the cause and possibly point out the means of avoiding the same.

The aim of the surgical technique has been to develop a method whereby hemorrhage into the pulmonary tract and septic pneumonia may be avoided, and the operation performed with dispatch.

The operative technique as herein described was developed through operations on dogs, and upon the cadaver. Various methods and devices were tried, recognized methods were tested, and finally the present technique was adopted.

I cannot sufficiently acknowledge my indebtedness to Dr. W. E. Lower, who assisted me in the several operations and rendered valuable aid in the research. The research was carried out in the Physiological Laboratory of the College of Physicians and Surgeons of Cleveland. The experiments were made on twenty dogs.

EXPERIMENTAL.

Methods.—Dogs under full ether anesthesia were made subjects of experiments. A tracing of the respiration and circulation before, during, and after the test was taken in each experiment, and from these tracings alone have the conclusions furnished been drawn. All these experiments have been repeated a number of times, and there is no point mentioned which I have not illustrated by tracings in my possession. After anesthetizing the animal, a canula was inserted into the trachea, so as to exclude any momentary obstruction to respiration or any complication of the result by any other cause than direct experiment; by this means at the same time the anesthesia can be more readily managed.

Record of Circulation.—The canula was placed in the carotid of the dog, and connected with a mercury manometer. The recording apparatus used was a single revolving drum.

Record of Respiration.—The respiratory excursions were recorded by means of transmitting apparatus acting upon a receiving tambour. The up-stroke represents expiration, and the down-stroke inspiration.

Having made all the preliminary preparations the technique of laryngectomy was performed. It was noted that whenever there was any considerable pressure or stretching upon the larynx, respiration was altered or arrested. The heart-beats were slowed and the blood-pressure would fall. When, however, the trachea was similarly tested, no such results were noted. The

slightest contact with the mucous membrane over the vocal region would cause the immediate arrest of respiration. A more firm contact would also cause a marked slowing of the pulse. The area thus responding is confined to the region around the vocal cords. The mucous membrane of the cricoid does not share this property in so marked a degree. Having established this constant phenomena, attention was given to the effect of drugs. One two-hundredth of a grain of atropia was injected into the jugular vein. This effectually guarded the heart, so that rude manipulation did not alter the heart's beat; the respiratory phenomena were in no way modified; while atropia guards the heart, it does not guard respiration.

Cocaine.—Four per cent. solution of cocaine applied by means of a swab upon the mucous membrane of the larynx, inhibited entirely the reflex action during manipulation, upon both the respiration and the heart. No matter how severe the intralaryngeal manipulation, the respiration and heart were completely protected. Hypodermatic injections of cocaine served to guard the heart, but did not guard the respiration. Section of the inferior laryngeal nerves did not alter the phenomena; section of the superior laryngeal nerves abolished at once all the respiratory and circulatory phenomena.

We therefore conclude that atropia effectually guards against reflex influences from the larynx by its inhibiting the reflex impulses through the superior laryngeal nerves. Cocaine locally applied inhibits all these reflex phenomena by inhibiting the impulses through the superior laryngeal nerves by action upon their terminals; while cocaine hypodermically guards the heart, it does not guard the respiration.

In the major laryngeal operations, whether general anesthesia is or is not used, the local application of cocaine is of paramount importance.

If local applications be impossible, then the hypodermic injections at the beginning of the operation of a full therapeutic dose of atropia to guard the heart should be administered.

The atropia may with advantage be combined with a full dose of morphine, thus lessening the amount of anesthetic necessary, and diminishing by their combined effect the secretion of saliva and of the bronchial mucus. The patient under this influence maintains an advantageous restful quiet after the operation.

TECHNIQUE.

The preliminary preparation of the patient is of considerable importance. Forced feeding should be practiced several days immediately preceding the operation, thereby enabling the patient to better pass over the first few days following the operation on an absolute or at least restricted diet; low tracheotomy ten days or more previous to laryngectomy, allowing thereby the patient to become accustomed to breathing through a tracheal tube, to lessen the time of the major operation, and as a necessary preliminary to the proper accomplishment of the technique to be described. The tracheal tube used is a combination of the conventional silver canula, over which a piece of best quality of soft rubber drain-tube has been snugly drawn; the tracheal end of the latter is allowed to project beyond the tracheal end of the metal tube, partly as a protection to the trachea, and partly to increase the length of the average tube, which is usually too short. The size should be as large as can be easily introduced, so that ample breathing caliber is insured. The best quality of rubber drain-tube thus attached to a rather short metal tube makes almost an ideal tracheal tube: it remains patent under the most violent paroxysm; it prevents irritation on swallowing; it cannot injure the trachea in any way; its flexibility allows its removal and introduction with

the greatest facility and without causing injury or hemorrhage; it is safe in the hands of a nurse; is easily cleaned; and, above all things, is always procurable in suitable dimensions at any time. Any one ever having been once under the stress of a threatened suffocation when the longest tube in his armamentarium is much too short to reach the recoiled tracheal rings, will never fail to appreciate the great importance of this simple device. At the same time he will find that the ordinary tracheal retractors have also a fatal shortness. At this critical moment the labored inspiration retracts the trachea to an incredible depth in the chest. Now, your best instrument is useless to meet these emergencies. I have used with great ease and success tongue-depressors as retractors, whose blades are four inches long. Granulation tissue soon springs up after the tracheotomy and comes everywhere in contact with the rubber tube, making the escape of air around the tube impossible. Several days previous to the laryngectomy this canula should be dispensed with, and a block tin tube, about six inches long, bent at one end to the same curve as the silver canula, is combined in a similar way with rubber tubing of like dimensions as the one previously in use. To the other end of the block tin tube attach the tube and inhaler of a Trendelenberg apparatus, thereby providing as well as accustoming the patient to the new breathing-tube. It will be found that by this accurate substitution the patient will breathe with the same comfort and ease as with the simpler apparatus. Having adapted one, it should be duplicated by another of precisely the same form and dimensions and tested. The patient's chest should be enveloped before, during, and after the major operation in a chamois jacket.

A quarter of an hour before the anesthetic a hypodermatic injection of a quarter grain of morphia and a

hundredth grain of atropia should be given. For this injection there is in my opinion physiological indication. I need only call attention to the fact that atropia inhibits the secretory fibers of the chorda tympani, thereby arresting the secretion of saliva: that it inhibits the pneumogastric nerve in general so that even the application of powerful stimuli to the nerve itself will not cause any inhibition in the heart-beat; the same effect also on the secretion of the bronchial mucous membrane. This property of atropine is utilized constantly in experimental physiology with almost unvarying results. Now, in laryngectomy, mechanical stimulation of some of the branches and terminals of the pneumogastric is made at almost every step, thereby causing variations in the heart's action. Atropine inhibits such stimuli, thereby protecting against such accidents. How frequently have operators noted the alarming depression, cyanosis, arrest of respiration at the moment the Trendelenberg canula was inflated. Prof. Wolf reports a case in which this occurred three times in succession, and finally he was obliged to dispense with the Trendelenberg canula altogether. Grossman calls attention to deaths occurring within a few days after the operation by inhibition of the heart, and so fall in the blood-pressure, caused by irritation of some of the branches of the pneumogastric. When possible, local application of cocaine should be applied at time of operation.

The position of the patient during the operation should be such that blood cannot trickle into the larynx. The patient having been placed in position and having had the preliminary preparation, a horseshoe flap at a distance of an inch from the superficial tracheal wound, including the skin only, is dissected up near to the margin of the orifice; each margin of the skin-flap is held by forceps, or caught with a suture and carried around behind the block tin tube and tied, thus forming a collar

of skin around the tracheal orifice, effectually preventing entrance of blood into the pulmonary tract, no matter how much the hemorrhage may be or in what position the patient may lie. Thus having shut off once for all the pulmonary tract from the entire field of operation, we may proceed without fear and without further precautions, as independently as if this great danger did not attend this operation. A median incision is carried upward to the hyoid bone, from which point incisions are made parallel to that bone. The larger vessels are divided between forceps as the incision is carried down upon the larynx in the median line. By means of a narrow, curved and sharp periosteotome, made especially for the purpose, closely hugging the box, the anterior and the lateral sides are readily freed. This is facilitated by applying a strong bullet-forceps to the crest of the larynx in order to control its position. Thus, beginning at the median line of the cricoid in a similar manner, with the curved instrument separate the entire cricoid, aided by turning the larynx with the bullet-forceps now to one side, now to the other. Always hugging the cartilage, the esophagus and the larynx are cautiously separated, freeing the entire larynx excepting its pharyngeal attachments above and the tracheal attachments below. Inserting now a tenaculum into the exposed trachea, and with the periosteotome under it, the trachea is severed, the free end elevated at once, a suture is passed through each side of the severed trachea—pulmonary end—giving control sufficient to prevent the entrance of blood into the pulmonary tract. The divided larynx is now raised up from its freed bed and the upper attachments severed with a scissors. The bleeding here is readily controlled by forceps. The severed pharyngeal walls are brought together by sutures, thereby separating the pharyngeal from the pulmonary tract. The trachea is anchored to

the skin by sutures. A large piece of iodoform gauze is spread over the gaping wound, and strips of gauze are packed down upon this large piece of gauze in a manner similar to the Mikulicz tampon. The severed end of the trachea is thereby closed. Communications being completely shut off above by suturing, and below partly by the rubber tracheal tube, but completely by the gauze packing, the large wound which so frequently causes such serious trouble in after-treatment, and so high mortality, becomes now a simple and safe matter. The entire wound is free from infection from the pharynx, and the lungs are doubly protected from infection from above. The importance of this cannot be too much emphasized, since the greater number of deaths following this operation are due to the advent of infection into the pulmonary tract.

The after-treatment is the same as in any ordinary open wound. Repair is rapid. No stomach-tube is used, but instead a soft catheter is passed through the mouth into the esophagus from time to time, and through the funnel attached to its free end, feeding is accomplished. The patient usually prefers to introduce the small tube himself. Feeding the patient in this manner for a number of days is less prejudicial to the wound, especially of the pharynx, than by permitting him to swallow, even when this act may be done with but little difficulty.

I am quite sure that once tried, surgeons will find this method a very great improvement over what is often made a serious matter. With all these safeguards thrown about the possible sources of danger, the position of the patient in bed is of little importance, and in ten days or two weeks he may be about at pleasure. There remains no necessity for the tedious inclined position of Bardenhauer, practiced by most of the German surgeons.

Laryngectomy has been regarded as one of the most difficult and tedious capital operations, requiring considerable time for its performance. A search into the literature of the subject will show that even in the hands of experienced operators from one to three hours is consumed. I have been able to find but a single instance in which the operation was performed in less than one hour. By the methods described I performed my first operation in forty-five minutes, my second in thirty-five, the third in thirty, and the last in forty-five minutes.

CLINICAL.

Three cases were done for carcinoma and one for tuberculosis. All made quick recoveries. One left his bed at the end of a week, and at the end of two months had gained thirty-eight pounds. Another had gained twenty-five pounds in about the same time.

Case I.— Total laryngectomy for carcinoma in a patient sixty years old ; recovery from operation ; death from recurrence in two and one-half months. Previously reported in the *Cleveland Medical Gazette*, December, 1892.

Case II.—By the courtesy of Dr. Sherman I was permitted, on August 25th, 1894, to make a tracheotomy on a male patient thirty-two years of age, whose life was threatened by the encroachment of a tumor which filled almost the entire larynx. Dr. Sherman was of the opinion that the tumor was a carcinoma, and in this opinion I concurred. Tracheotomy was made under cocaine. Our diagnosis was confirmed by a microscopical examination of a small gland removed from beneath the sternoclidomastoid muscle. The cells showed active mitosis, indicating that the tumor was in active growth. The entire larynx was enlarged in every direction—it appeared spread out. At the time of the patient's ad-

mission into the hospital he was also suffering from a severe bronchitis; after ten days this had well cleared up, and a total laryngectomy was made in accordance with the technique herein described. The patient made rapid recovery, was able to sit up after the fourth day, and left the hospital at the end of two weeks. A troublesome cough, with fever, and expectoration which had existed for several months, disappeared during the first week after the operation. The wound healed rapidly, and at the end of two months he had gained thirty-eight pounds. Later he returned to his work as blacksmith, and continued for several months; after the lapse of six months a large gland was removed from the right side of his neck. I did not again see the patient for about six months, when he called on me with an enormous secondary growth, involving almost the entire anterior and lateral sides of the neck. The case was inoperable. Twenty-one months have now elapsed since the operation.

Case III.—Total laryngectomy, occupation lithographer, single, father living, mother died at thirty-five with cancer of the breast, one brother and one sister in good health. No history of venereal disease. Patient had been in good health until four years ago, when he had hoarseness and sore-throat. The hoarseness gradually grew worse. About two years previous to his entrance to the hospital he fell in the street in a "choking spell"; a physician made a tracheotomy, and he had been obliged to wear the tube ever since. During the past five months he had lost thirty pounds. By the courtesy of Dr. A. R. Baker and Dr. A. J. Marvin, I was permitted to see the case. Dr. Marvin removed two pieces of the growth, which were examined by Dr. Ohlmacher, who pronounced it granulation tissue. The growth had been under observation at other dispensaries for several years, and in comparing

notes it was found to resist all treatment, and showed a tendency to gradual invasion from below upward, so that at this time it extended from the upper two or three rings of the trachea throughout the larynx, thereby making it almost impossible to restore breathing caliber to the entire larynx and the upper part of the trachea. The discharge from the ulcerative surface was considered the cause of the persistent bronchitis. In view of the extent of involvement and its resistance to all treatment by well-qualified specialists, total extirpation was made. The patient made a rapid recovery from the operation, improved for a time, but had recurrences of fever, and after a month or more complained of sharp abdominal pains; the abdomen enlarged, the spleen enlarged, his lungs were involved. The laryngeal symptoms of course disappeared, his general condition improved only temporarily, and at the end of eight months he died. The autopsy revealed extensive tubercular involvement of nearly all the viscera, the peritoneum, and the lungs.

Case IV.—Male, aged thirty-five, a barber by occupation, without any personal or family history bearing upon the malady in question. Experienced hoarseness about two years previous to his operation. The cause of the hoarseness was papilloma of the left vocal band. A mutilating attempt for several hours was made by a homeopathic specialist. Dr. H. M. Page, of Hiram, O., seeing the case, recognized its importance, and brought the case to Dr. H. G. Sherman for consultation. The latter gentleman, with Dr. Page, concluded that the growth was of malignant character, and straightway removed a piece, which was submitted to pathologist for diagnosis. The examination showed growth to be a carcinoma of rapid development as indicated by the mitosis and the number of inclusion cells. There was infiltration of leucocytes, and the tissue was swarming

with bacteria. Through the extreme courtesy of Drs. Sherman and Page, and in their presence, as well as Drs. Lincoln and Snow, I made total extirpation of the larynx. All through the outer aspect there was a very considerable thickening, which was suspected to be extension of the intralaryngeal growth. This thickening extended downward upon the upper rings of the trachea as well. It was proven later that this was inflammatory infiltration, due to the advent of infection through the cricothyroidean space upon the outer aspect of the box of the larynx, where a cavity of considerable size was situated. A sinus was found to lead down from this cavity through the above mentioned space, hugging the inner surface of the thyroid up to the point at which the homeopathic specialist directed his operative attack. On raising the larynx it was found that the cancer extended to the base of the tongue and in the tissue, lying laterally to the opening. The patient made a rapid recovery from the operation, and was able to sit up in bed on the afternoon of the same day, and at the end of the week was able to leave his bed. He has for some time returned to his former employment, has gained twenty-five pounds in weight, and is enjoying robust health. By means of buccal sounds he is able to talk.

SUMMARY.

Experimental.—Contact, even slight, with the mucous membrane upon and about the region of the vocal cords causes sometimes partial but more frequently complete arrest of respiration; pressure or dragging on the larnyx causes in addition a considerable, sometimes very great, slowing of the heart-beat and correspondingly considerable or very great fall in blood-pressure, in several cases almost to zero. On section of the inferior laryngeal nerves the phenomena are not changed; on section of the superior laryngeal nerves the phenomena are abolished.

Atropia in physiologic doses abolishes the heart phenomena but does not prevent the respiratory alterations or arrest.

Cocaine hypodermatically also guards the heart but not the respiration. Cocaine locally applied abolishes completely both the effect upon the heart and the respiration.

These results having been obtained by graphic record on twenty dogs under full ether narcosis, we may conclude that the phenomena are due to reflex action caused by mechanical irritation of the peripheral terminals of the superior laryngeal nerves, and that cocaine locally applied paralyzes the same even under full anesthesia. The local application of cocaine in certain laryngeal operations is indicated.

Clinical.—Carcinoma probably cannot penetrate cartilage. The most frequent point of attack is the region of the vocal cord, consequently causing early symptoms. When suspected a specimen should be early secured and submitted to a competent pathologist, and if proven cancer an early and radical operation should be performed. Early operations should be extremely promising.

In neglected cases, usually ulcerating and foul, suffering from septic bronchopneumonia caused by the discharges or by entrance of food, subjects of most intense suffering, a radical operation, while it may not cure, will give a respite and prove to be merciful and humane. The testimony of patients themselves on this point is emphatic. By the technique described the pulmonary tract may be safely guarded, the operating time lessened, the patient allowed as much recovery freedom as after the most favored capital operation, and better than all, the high mortality very greatly reduced. The four total extirpations reported made good recoveries.

DISCUSSION.

DR. THOMPSON:

The larynx is one of the latest organs surgeons have been bold enough to attack for malignant disease. All operations for removal of the larynx involve organs necessary to life, so the mortality in the first operations has been very high. Any modification of the technique, or any procedure that will lessen this immediate danger, is certainly very valuable. This Society is greatly indebted to the essayist for the experiments reported, showing how the danger from heart-failure and from suffocation can, in a large measure, be avoided. Pressure within the trachea or especially within the larynx, will suspend respiration. We see this in intubation, where the larynx is unusually full of diphtheritic membrane. Introduce a tube of the ordinary size and it will suspend respiration. Until a part at least of the membrane has been absorbed a smaller tube must be used. We have found the same trouble with the Trendelenberg canula in the removal of the larynx. Any pressure within the trachea sufficient to prevent the entrance of blood into the bronchi, is sufficient to suspend respiration. It was to avoid this difficulty, and also the great danger of septic pneumonia, that I made a modification of the technique in a laryngectomy made by me about a year ago. The patient was anesthetized in the ordinary way, and all the muscular and ligamentous attachments dissected loose before the trachea was opened at all. If you are operating for a sarcoma as I was, and the tissues are very vascular, the advantage of this method will be apparent. After the larynx has been freed from all but its membranous attachments to the surrounding parts, you can open the trachea, put a sterilized sponge above the tracheotomy tube, and give the anesthetic through the tube. If the head is the lowest part of the body, that is, if the foot of the operating-table has been raised, I think then you are entirely safe.

Another point of importance in the operation, and especially in the after-treatment, is to leave the cricoid cartilage in position. Malignant growths of the larynx usually take their origin high up in this organ, and there is no reason for removing the lower cartilage. There

are several very important reasons for leaving it alone. The most important one is in the after-nourishment or feeding of your patient. The longitudinal fibers of the esophagus are arranged in fasciculi or bundles, part of which are attached to the cricoid cartilage. If the cricoid cartilage is left to support these fibers, the patient will have a great advantage in his efforts at swallowing. If, after the inferior constrictor of the pharynx is separated from its attachments to the thyroid cartilage, you stitch the cut edges together from side to side, and attach it to the thyrohyoid membrane above, you have a straight muscular tube from the base of the tongue to the esophagus. After union occurred in my case, the patient swallowed with ease and there was no stricture at any time.

Another important reason for leaving the cricoid alone is that you do not have a recession of the trachea, and it is not necessary to stitch it to the surrounding tissues if this cartilage is not removed.

The doctor has spoken of the difficulty of controlling the trachea and the shortness of the tracheotomy tubes, allowing them to slip from the trachea in low tracheotomy. The difficulty in controlling the trachea can be easily overcome, if, with a half curved needle, a stout silk thread is passed around one or two tracheal rings on either side before the trachea is opened. These threads can be left in position for several days, and by traction on them the trachea is easily lifted into the field of observation and the wound held open at any time.

DR. STRAIGHT :

The Doctor reports an instance of removal of the larynx in a case of tuberculosis. Did he mention the condition of the lungs ? I can understand how laryngectomy is a perfectly justifiable operation in primary tuberculosis of the larynx, but primary tuberculosis of the larynx ordinarily does not occur. There is almost always an associated tuberculosis of the lungs. I have never seen a case of primary tuberculosis of the larynx without disease of the lung. In primary tuberculosis of the larynx the removal of the entire larynx would be the best thing, I know, but the objection to all opera-

tive measures in laryngeal tuberculosis is that so many cases die of tuberculosis of the lung. Laryngectomy certainly would not be an advisable operation where there is involvement of the lung.

DR. CRILE:

I have been very much interested in the discussion by the gentlemen. Dr. Thompson has thrown out some very useful hints, which I shall bear in mind. I agree with him, the cricoid should be left and not removed, when the disease does not extend down to the cricoid. In my cases, unfortunately, I have been obliged to remove the cricoid and sometimes some of the rings of the trachea also, and even the base of the tongue and the hyoid bone.

Now as to the artificial larynx. I have tried artificial larynx, and in my own experience I am not favorable to it, although it may be others have succeeded better. The reason I am not in favor of it is that in each of the patients upon whom I operated, the patients have been able to speak but none of them have had much of a voice. I have thought the artificial larynx would be a source of danger from food and infection getting into the lungs, and I believe it is better to dispense with the tube as much as possible.

I quite agree with Dr. Thompson's remarks about the low tracheotomy. It is difficult in a child with a short, thick neck, and even in adults it is sometimes difficult.

As to Dr. Straight's remarks, I will say I do not press the operation for tuberculosis. In this case the tuberculosis was aggressive. I was thoroughly advised in the case. From the fact pus was constantly trickling down into the lungs and the patient was constantly coughing, I operated. Although the sputum was examined frequently for tubercle bacilli, none were found, and no bacilli were found in the section cut from the larynx.

IS IT GRIP OR—WHAT?

L. B. TUCKERMAN, M. D., CLEVELAND.

Within the last few months it has been the lot of the writer to happen upon what seemed to him an unusual number of cases of slow heart. These cases have run something as follows: The patient has a sudden attack of severe headache. There is at first no great depression, and he tries to keep about his business. The headache persists, however, and in a day or two he consults his physician. The general appearance of the patient can be most accurately summed up in the one word "wilted." The nails are blue, and the skin of the hands purplish and moist. Eyes are dull and lusterless. Tongue uniformly coated with a thin, whitish coat. Pulse ranges about 100 beats per minute, is feeble, with a tendency to be dicrotic. While the extremities feel somewhat cool and moist, the skin of the trunk is hot to the touch, and the thermometer will register from 100.5° to 102° Fahrenheit. The bowels are commonly constipated; abdomen not tympanitic nor tender, nor showing the specific eruption of typhoid. When these patients are put to bed the fever usually subsides in a day or two, but the patient doesn't get up. The headache is gone, temperature is either normal or more often from a degree to a degree and a half subnormal, but the pulse is feeble, and ranges from 45 to 55 per minute. There

it stays for a week, or maybe for two weeks, by the end of which time both pulse and temperature have gradually crept up to normal again.

In one case which ran about the usual three weeks, the temperature was from one to two degrees above normal, while the pulse ranged about 48. In this case, when convalescence began, the pulse-rate gradually rose as the temperature fell. In another case (a girl of twelve years) beginning suddenly with vomiting and headache, instead of being uniformly retarded the pulse was regularly intermittent every fourth beat—three beats and a pause. Her pulse became steady at about 84 by the end of a week or ten days, but the temperature ranged from one to two degrees above normal for about five weeks.

The treatment in these cases may be briefly described as aperient and tonic, only in the tonic mixture atropia was added to the usual quinine and strychnia.

In none of these cases has there been any appreciable lesion of either heart or lungs, but the tendency to mental depression is marked, as in typical grip. The phenomena appeared to be purely of nervous origin.

Last fall there was played between two of the Cleveland schools a game of football. In order to win, it became necessary for one side to put the leader of the other side "out of the game," as they say. So, when the opportunity came, some one "kneed" him, that is, when he was on his back, fell upon him with one knee on the pit of his stomach. The player was of course out of that game, and he isn't well yet, for he is barely able to walk a block and back without fainting. He had persistent pain referred to the region of the solar plexus—the site of the injury, but, like the cases already detailed, he also had persistent slow pulse and an obstinate tendency to constipation.

We have, then, a febrile disturbance leaving in its wake symptoms like those which in this last case followed a blow in the epigastrium. Professional confrères who have seen these cases with the writer have been inclined to ascribe them to grip, regarding them as atypical manifestations of that protean disease. With shamefastness it must be confessed that the blood has not been examined for plasmodium. In case the malady be not grip, nor yet one of the more obscure malarial phenomena, how would it do to call it *bradycardia febrilis?*

THE CAUSES AND MECHANISM OF RETROFLEXION AND RETROVERSION OF THE UTERUS.

HUNTER ROBB, M. D., CLEVELAND,

Professor of Gynecology, Western Reserve University.

I shall not attempt now to cite all the possible direct and indirect factors which are concerned in the production of retroversions and retroflexions. I shall only try to classify them sufficiently to give you some clear idea on the subject.

Retroversion within certain limits and when only transitory may be physiological, and occurs every time that the bladder fills with urine. Retroflexion is rarely congenital, but if the cervix is of the normal size while the body of the uterus is smaller than normal, then the natural position of such a uterus will be in retroflexion.

Retropositions, more especially if they are at all marked, are generally accompanied with a certain grade of descensus uteri, and the same causes which bring about this latter condition will consequently tend to produce backward displacement of the uterus.

The uterus being normally in a position of anteflexion and mobile equilibrium, a displacement must be due to a disturbance of the balance of the forces securing this equipoise.

Why should the healthy uterus preserve its position? In the first place, the normal tonicity of the surrounding tissues resists any exaggerated movements of the uterus. The uterus is suspended in the broad ligaments, which are broader above than below, and which resist any backward twisting which would cause them to change their form. The uterus is closely connected with the bladder in front by the utero-vesical ligament, which leaves its anterior surface near the internal os. Below this point it is bound directly to the bladder by a connective-tissue network. The bladder as it lies in the front part of the pelvis thus holds the uterus forwards. It will be remembered that the bladder does not assume a spherical form as the urine accumulates in it, but distends rather to the right and to the left of the uterus like saddle-bags. Further distention of the bladder is often in the direction of the abdominal cavity; so that, more especially when its connections with the uterus are somewhat loose, the viscus becomes an ovoid, with its short axis between the symphysis and the promontory of the sacrum, and only in extreme distention is the body of the uterus forced far enough back to produce marked retroversion. The connection of the uterus with the bladder, therefore, is one of the most important means by which it is kept in its normal position. Posteriorly two arms, the utero-sacral ligaments, reach out, one from either side of the sacrum, and passing round the rectum grasp the cervix uteri and hold it well back in the pelvis. The anterior peritoneal reflexion is high up, so that the pull on the fundus is altogether forwards, whereas the posterior reflexion of the peritoneum is low down in the cervical region. The utero-sacral ligaments contain important muscular fibers, and are appropriately named retractores uteri. The other posterior connections of the uterus assist the action of these ligaments.

Distention of the lower bowel tends to force the cervix down and forwards in the pelvis, but the ligaments draw it back again as soon as the fecal mass has passed. As the muscles of the abdomen contract, the intestines are pressed upon. But behind we have muscles which are stiffened by the vertebral column, and which are unyielding. The diaphragm above is involuntarily fixed and supported by the lungs filled with air, which are enclosed in turn by the vaulted bony thorax. Below, an intact pelvic floor and the bony pelvic walls catch the impulse of the intestines and throw them back.

Now, suppose that a single point be unprotected and be incapable of offering a resistance to the pressure made upon it. What will occur? At this point there is a slight giving way; the structure immediately behind yields to a like extent, and thus the first step in the formation of the hernia is brought about. You have all seen the effects of too strong intra-abdominal pressure over patulous inguinal rings and near the umbilicus. Here we have an analogous procedure.

The anal outlet is under the guard of special muscles, and simultaneously with the contraction of the abdominal walls these relax for the periodical expulsion of feces. But before the feces are driven out of the body by the contraction of the walls of the cylinder as well as of the abdominal muscles, they have to pass along a canal which takes an oblique course. From the brim of the pelvis down, the canal is guarded from displacement by its peculiar relations to the pelvic walls, but it is still within the reach of abdominal pressure as long as it lies above the point of union of the two halves of the levator ani muscle.

The effects of abdominal pressure were for so long a time so little appreciated that it is necessary to emphasize these facts, since they are of the utmost importance for the proper understanding of the mechanism by which

retrodisplacements are produced. With every relaxation of the levators and every rectal evacuation, a slight downward displacement of the uterus in the direction of the pelvic floor takes place. The displacement, however, is only slight, and is at once corrected by the elasticity of the uterine supports, which overcome it as soon as the pressure ceases; under normal circumstances, therefore, it is unaccompanied with any bad results. The force being transmitted by the intestines, the latter press down upon the upper posterior surface of the uterus, forcing it into a position of more pronounced anteversion; the cervix, being out of the direct line of pressure, is displaced less than the fundus; if no anteflexion is present, it may be produced in this way, and any slight flexion which exists will be increased.

A normal vaginal outlet is not to be looked upon as a weak point which would have any tendency to yield, for you must remember it is placed well forward, hugged up tightly under the pubic arch, where it enters the pelvis piercing the floor not straight but obliquely. The normal outlet is so tightly closed that it is only a slit in the pelvic floor, and one that is thrown eccentrically forward out of the direct line of pressure.

Understanding then the effect of intra-abdominal presure upon the normal uterus, let us inquire what effect it would have upon a uterus which, from some cause or other, has been displaced backwards to a slight degree. The pressure now is exerted on the fundus and upon the anterior surface, and consequently the backward displacement is increased; and the more the posterior surface is forced down towards the pelvic floor, the greater becomes the mechanical disadvantage at which the uterus is placed with reference to the future recovery of its normal position, since every act of abdominal pressure tends only to exaggerate the mischief. Thus the same force which under normal conditions is wholesome and

necessary, at another time, when the conditions have been changed, can become hurtful.

The explanation just given will clear up much that is puzzling as to the mechanism of retroflexion. You must not, however, suppose that this mechanical explanation is all-sufficient; if it were, the cure of all retroflexions would be absolutely simple. We should take a sound and turn the uterus forwards upon the bladder until it was in a position of anteflexion, after which the abdominal pressure would once more be exercised upon the posterior surface. But another factor comes into consideration. With or rather before the displacement, something has been lost; the tonicity of the surrounding tissues has been interfered with, so that the anatomical relations of the uterus to the broad ligaments, the bladder and rectum, no longer have their proper value, and the uterus tends to fall backwards under the simple action of gravity. Once in this position there is nothing to bring it back. Nothing tends to put the malposed uterus back into its place; everything conspires to make an incipient malposition worse. Intra-abdominal pressure is now acting disadvantageously for the uterus, because the anterior instead of the posterior surface is exposed to its force.

What is it that brings about this first step? A want of tone in the suspensory structures is commonly the ultimate cause of displacements. If the surrounding parts were not too lax or too rigid, simple reposition would always effect a cure, since the tonic elasticity and contractile powers of the peritoneal and of the connective and muscular tissues would hold the uterus in its proper place. This want of tone is usually the consequence of overstretching, repeated excessive straining, too great pressure long continued, and lastly, to changes resulting from inflammatory processes.

To sum up, then, in the causation of backward displacements of the uterus other than the congenital variety mentioned above, one or more of the following factors may be concerned:

(1) Congenital defects. A short vagina necessitates a forward position of the cervix; this tends to bring the fundus and anterior surface of the uterus under the direct line of abdominal pressure. The ordinary distention of the bladder, which as a rule slightly elevates the fundus, now throws it backward, thus causing a displacement. A congenitally long cervix cannot rest with its long axis crossing that of the vagina; this also tends to throw the fundus backwards. Where the cervix is long, the body of the uterus is apt to be small and short. In such cases which show a persistence of the fetal type the normal position of the uterus is, as I said above, in retroversion.

(2) Extreme distention of the bladder throws the fundus far back in the pelvis behind the median line. When this happens often the malposition is liable to continue.

(3) Impacted feces in the rectum extending up above the ampulla push the cervix down in the vagina, and thus change an anteversion into a retroversion.

(4) When the pelvic floor is imperfect and yields too much, a sudden severe strain put upon the abdominal muscles, especially when the bladder is full, brings about a retroflexion by forcing the uterus downwards.

(5) Of all causes of retropositions, by far the most frequent is a relaxation of the vaginal outlet; the relaxed outlet must be looked upon as a deficiency in the pelvic floor which leaves a smaller or larger surface over which no counter-resistance to the intra-abdominal pressure remains. Every act accompanied by intra-abdominal pressure tends to thrust out the adjacent vaginal walls; when these have once entered the orifice

they continue to be forced down, wedging the posterior walls further away from the symphysis. While the parts below thus give way, the uterus itself yields and dropping down is forced towards the outlet. On account of the attachment of the cervix to the vault of the vagina the effect is first felt at the cervical end; with each strain the uterus sinks down, and as there is no pelvic floor to resist, it never fully returns to its original position. As the cervix thus drops swinging down towards the outlet, the opposite pole, the fundus, rotates so far back that the force of the pressure, which falls at first directly upon the fundus, is finally spent upon the anterior surface of the uterus, and complete retroversion or retroflexion is established. In traveling towards the outlet the vaginal cervix acts as a guide which is followed by the uterine body. The cervix resting upon the posterior vaginal wall slips along it in the only direction in which it can possibly move towards the outlet; as it slips further and further down, the vagina and uterus follow; when the tonicity of the pelvic floor is gone it no longer returns the uterus to its original position, and the latter drops lower and lower until it emerges at the outlet; in the case of a heavy or subinvoluted uterus these changes occur with still greater rapidity.

A large lacerated infiltrated cervix so weighs down the inferior pole of the uterus as to disturb the nice balance of equilibrium, thus rendering more frequent the occurrence of displacements.

(6) Finally, retroversion and retroflexion may be caused by inflammatory changes in the uterine supports, or by the dragging of adhesions resulting from a pelvic peritonitis. It can well be understood that when once adhesions have occurred, even if the normal tonicity of the uterine supports could be regained, the mischief would have gone too far to allow them to act properly.

As a matter of fact a vicious circle has been formed, and all the mechanical forces which tend to keep the uterus in equilibrium are now being employed in drawing it still further from its normal position.

Although the question is still under discussion, the consensus of opinion is in favor of the view that the mechanism bringing about retroversion in the pregnant uterus is just as complicated as in the case of the non-impregnated organ.

DISCUSSION.

DR. HERRICK :

Feeling a general interest in the paper, some special questions have arisen in my mind. I venture to offer some suggestions or thoughts in connection with the paper. I am inclined to the impression—of course, in discussing the paper we give our personal impressions with a view to getting light rather than to criticize the paper—I think too much stress is given to the ligaments which in the paper are supposed to hold the uterus in place. I have not regarded those ligaments as effecting very extensive tension in holding the organ in place. I am, myself, of the impression that the position of the uterus, situated as it is between the rectum and bladder, would naturally hold the uterus in place, unless there are some other agents disturbing the integrity of the organ, or some constitutional disturbance. The size of the uterus, I think, is one of the important factors. A lack of tone in the patient, a lack of constitutional vigor, a condition we often speak of as neurasthenia —a term which covers a great multitude of difficulties —may lead to retroversions and retroflexions. Those conditions of the system, therefore, which contribute to the general health and tone of the patient, I would regard as of the greatest consequence. Another factor, it seems to me, of importance, that was not mentioned by the Doctor, is the crowding down of the intra-abdominal organs by dress pressure. It yet unfortunately is the custom of some ladies to stay tightly the waist of the body, and thereby force the abdominal

organs to rest on the brim of and within the pelvis. It seems to me this is one of the factors requiring attention. I am pleased with the paper and the suggestions the Doctor has made, and shall be glad to hear further along this line.

DR. FITZSIMMONS:

I would like to have the experience of gentlemen who have had experience in this matter, as to rest. It was an idea held some years ago, that we could only treat this disease, if it is a disease, by insisting upon a prolonged rest in bed. I don't know of any class of cases that require more patience; I don't know of any kind of treatment that is entirely satisfactory; I don't know of any force that will replace the functions of the uterine and vaginal tissues, and I don't know of any way of making it a success generally. Possibly in the hands of the specialist it may approach success. The general practitioner often wishes he had means which would assist the patient. The treatment is not, I believe, gentlemen, satisfactory. I know no class of cases which pass more frequently from one physician to another. I would like to bring out remarks along this line, for I think it is the true elements in these cases we want to know to establish our practice upon.

DR. HALL:

The paper is a very interesting essay, indeed, and one which I have enjoyed very much. To confine my remarks to the paper proper, I assure you I couldn't add much of interest or profit to the hearers. But there is one suggestion thrown out by the essayist, one statement as to the most potent cause of retroflexion and retroversion, of which I wish to speak, and that is the relaxed outlet from injury following childbirth. I want to speak to that point for the reason many cases coming to the physician for relief are cases following injury from childbirth. Now then the Doctor goes on to say that not infrequently, when they come to the physician for relief, we find the uterus adherent. Then it is past temporizing. The point I wish to make in this little talk is to emphasize the fact that all cases

after delivery, in which we find the pelvic floor injured, should be repaired before the uterus is fixed in an abnormal position, and we can cure many of these cases by a very simple operation. If, however, these cases are allowed to go on until the uterus is adherent and fixed, then we know of no means by which we can give relief, unless these adhesions are broken up and the uterus stitched forward. The treatment is not under discussion. The patient, herself, is not always conscious of this injury when done, and she may not be conscious of it for many months and not infrequently for several years afterward, and then the injury perhaps is past remedy by any simple measures.

DR. C. R. REED:

The subject of retroversion and retroflexion of the uterus I should judge to be considered of great importance by the gynecologists from the amount of literature written on the subject. We have some very elaborate articles. There is one written by Dr. Howard Kelly, of Johns Hopkins University, on the subject of what he calls "Suspensio Uteri," in which he "harpoons" the uterus—if I may use that term—draws it forward, and anchors it to some part of the abdominal wall. Another is the vaginal fixation, and another, abdominal fixation, and shortening the round ligaments. All these subjects have been ably discussed by gynecologists, showing this condition is a very common one.

If the cases of retroflexion and retroversion were recognized and properly treated in the early stage, they would never become as severe, uncontrollable and incurable as referred to by one of the speakers to-day. But they are not recognized in the young married woman nor in the young single woman. They go on and become worse and worse, without the woman or her friends or her physician knowing what the trouble is. They say the patient is hysterical or nervous or has neurasthenia, and she is in bed about half the time, and at other times is suffering perhaps a good deal of pain. I may be enthusiastic upon this subject, but I have found hundreds of these cases that have been undoubtedly suffering from that condition for months or years. If the condi-

tion had been recognized early, the condition would have been readily cured; but after the uterus has become fixed in that position, its nutrition and circulation greatly disturbed, it becomes enlarged, the fundus of the uterus becomes hypertrophied, it becomes unnaturally heavy, is inclined to sink further and further in that position, and by and by the woman, young or old, becomes more comfortable lying on her back, thereby only increasing the trouble without her knowing it. Then some physician may venture to make an examination per vaginam with the finger, and he probably will recognize nothing, except perhaps he may find the os looks upward and towards the pubes, which is a positive indication that there is a backward displacement, either flexion or version, but he does not recognize the position of the fundus, and therefore he is ignorant of the condition of the uterus. But if he will take the pains to make an examination per rectum, his finger will probably come in contact with the fundus at once--and then he will not know whether it is a fibroid or what it is. Now if he will insert a uterine sound of proper construction and manipulate it, he will turn the fundus up, and then with his finger in the rectum the fundus cannot be felt, and he then will know that it is a retroflexion or retroversion.

Nothing is said in the paper about the treatment, and therefore I should not refer to it, but I will say I learned a number of years ago to use the Hodge pessary, and I think I have restored hundreds of uteri to a proper position by the persistent use of the Hodge lever pessary, every month or two changing to one of greater curve and perhaps a little longer. When the natural circulation is restored, the organ becomes lighter and easier held in place by the ligaments. And let me quote here what the inventor of the pessary said: "After a few weeks or months, at least, the woman finds herself relieved without knowing what the great blessing was that restored her."

DR. GIBBON:

I would like to ask whether sufficient importance has been attached to the attitude of the children while

they are being educated; and what influence sitting upon seats so illy adapted to them has upon the development of uterine versions and flexions. It seems to me if careful investigation were made of the cases coming under our observation, we would find, in a large percentage of them at least, first a displaced pelvis, followed by a displaced uterus. The child, placed upon a seat so high that it cannot touch the floor with its feet, tries to relieve its discomfort by sliding down upon the seat until the feet touch the floor, or it can rest the knees against some portion of the desk, thus tipping the pelvis and changing the anatomical relation of the abdominal and pelvic organs. There is resultant hyperemia and a train of symptoms until investigated by the physician. He finds some of the uterine displacements, among which is retroflexion. I believe if we would treat displaced pelvis in the youth, we would have fewer cases of displaced uterus in the adult.

DR. BALDWIN:

I listened to the paper with very great interest. I think a great deal might be said along the line of the last speaker's remarks, because I think it is very certain we find many more of these displacements in our highly educated women than in those not so well educated. Whether it is from the tilting of the pelvis or what, I do not know, but I have seen these cases so early that I might almost regard the relaxation as congenital. A word as to relaxation of the outlet: I do not think rupture of the perineum is necessarily followed by retroversion or prolapse; but, if in addition to the laceration there has been an overstretching of the tissues so that we have a cystocele or rectocele, the constant pulling of these will almost invariably produce a retrodisplacement and then a prolapse. I have recently had four very interesting cases under observation, each carrying out this idea. One I operated on some months ago for a laceration of the perineum, involving the septum, of about five years' duration; the woman in the meantime had borne three children, and came to me for relief for lack of control over the bowel. The operation, which is the one I always make in these cases, a modification

of the flap-splitting, was entirely successful. Within a week I have operated upon a woman with a similar history, except that it extended back twenty years. I have now under observation two other cases in which the condition has been in existence for a number of years, but in none of the four cases was there developed any tendency to prolapse of the uterus; in neither case was there developed either cystocele or rectocele. On the other hand, I have, of course, seen a number of cases in which there was no laceration of the perineum whatever, but with cystocele and rectocele there was decided prolapse preceded by retrodisplacement.

It seems to me that in the production of this displacement, we must place a good deal of stress on the loss of action of the round ligaments; because we know when we draw out those ligaments, as in the Alexander operation, we cure the displacement. This certainly accounts for a large number of these cases which occur before the child-bearing age, or at least before the birth of children. Only a few days ago I operated on a virgin, twenty-three years of age, whom I have known since she was a little girl, and in whom there was retroversion with extreme prolapse. There was no shortening of the vagina, so that I could easily push the uterus up, but everything would at once drop back. I did not think a vaginal operation wise, so I made a ventrofixation and found only the slightest possible vestiges of the round ligaments.

I wish the Doctor had said something about the treatment of these displacements. I have used pessaries for years, but I confess the cures were few and far between; the failures were comparatively numerous.

DR. ROBB:

In answer to Dr. Baldwin's question, I would say that a complete rupture of the rectovaginal septum, or the so-called perineal body, does not always cause a displacement of the uterus, and this significant fact by itself proves that the so-called perineal body is not the main supporting structure of the intrapelvic organs as was formerly supposed. When the tear extends backwards from the fourchette in the median line, though it

may involve the bowel and the rectovaginal septum, the lateral fibres of the levator ani remain intact and we still have some support for the outlet; when, however, the laceration deviates markedly to one side, so that the lateral fibres of the levator ani are ruptured and its attachments to the rectum are broken, displacement backwards of the uterus or prolapsus uteri will most probably occur.

It has always seemed to me that we might state the conditions in the form of a simple sum as follows: Suppose the pelvic floor represents twenty units of strength and the intrapelvic supports represent ten units. Let us further suppose that the normal intra-abdominal pressure is equivalent to fifteen units of strength; under ordinary circumstances, then, we have thirty units to resist fifteen units of strength. If this be the case it is clear that the support must be more than sufficient. But suppose that the twenty units of the pelvic floor are taken away by a severe laceration; ten units are now opposed to fifteen units, and it is easy to see what will be the result.

PERFORATIVE ULCER OF THE STOMACH.

WM. J. GILLETTE, M. D., TOLEDO,

Professor Gynecology and Abdominal Surgery, Toledo Medical College; Gynecologist and Surgeon, Toledo Hospital.

Habershon describes three forms of ulceration of the stomach:

1st. A superficial ulceration affecting only the mucous membrane.

2d. A follicular ulceration.

3d. Perforating ulcer, acute and chronic. This third variety constitutes the subject of this paper.

Of all rapidly fatal conditions to which the human economy is liable, but few are more deadly than perforating ulcers of the stomach. The pathology of acute perforating ulcer is involved in much obscurity, though many theories have been advanced, notably the embolic theory of Virchow; the theory of its nervous origin, and that the perforation is due to digestion of the stomach-wall when for any reason arrest of the circulation has taken place.

The theory that it is of nervous origin seems to have the greatest number of advocates, though the experiments of Pavy and Panum amply prove that digestion of the stomach-wall always or generally follows obstructed circulation. But to all these theories there are grave objections, into which I will not enter now, and Habershon no doubt says correctly that "it is very

evident that there must be some, perhaps specific, predisposing cause for this intractable affection, of whose precise character we are still ignorant."

The age at which these perforations occur varies according to the sex of the patient; in the female, between the ages of fourteen and thirty, and in the male much later in life. In the female, the average period of life is twenty-seven years, and in the male forty-two years.

The point at which perforation occurs varies, but most frequently happens on the anterior wall of the stomach, as large a proportion as eighty-five per cent. occurring here according to Brinton. Though perforation of the stomach is usually followed by fatal peritonitis, yet in a small proportion of cases, when the ulceration has been sufficiently slow in forming to allow a barrier of lymph to be thrown out protecting the peritoneum, the general cavity has escaped infection. The probabilities of this occurring vary according to the position of the ulcer in the stomach-wall. When the perforation is through the anterior wall, adhesions are not likely to be formed.

In a report by Herman Eichhorst, I find that of seventy-five cases at this point there was complete perforation sixty-four times, "whereas in thirty cases at the cardiac extremity it occurred but twelve times."

When adhesions have had time to form, recovery is the rule; but in the acute perforation, when the contents of the stomach are suddenly poured into the general peritoneal cavity, the case is almost of necessity fatal.

In 1883, Mikulicz first operated for this condition, but unsuccessfully. Operations have been performed, however, a number of times, mostly by continental surgeons, with a twenty per cent. rate of recoveries. Kriege, of Berlin, is said to have had the first success.

I can see no reason why an operation should not be as successfully performed in these cases, if recognized in time, as in many other emergencies of abdominal surgery, as for instance in ruptured tubal pregnancy. The stomach can be reached and sutured at all points upon its surface, even posteriorly, as can be readily demonstrated upon the cadaver. To be successful, however, the operation should be performed very early after the accident. Michaux, of Paris, who reports a successful case, says within fifteen hours of the accident, for as a rule the time is short after perforation until death occurs. Habershon estimates it at from five to twenty-four hours, though cases may live a number of days after. One of mine lived five days after perforation.

Recognizing the great importance of early diagnosis of perforation, then, the principal points upon which we must rely for a diagnosis should be carefully studied. It is an astonishing fact that acute perforations of the stomach often occur in those well nourished, and the patients themselves have not been aware that anything of importance was the matter with them until suddenly seized with pain. Symptoms of perforation as laid down by Eichhorst are as follows :

"Acute pain, signs of great collapse, extensive tympanites and symptoms of perforative peritonitis (pain and disappearance of hepatic and splenic dullness). *Vomiting may be absent.*" Of the value of the disappearance of hepatic and splenic dullness as evidence of gas free in the abdominal cavity, one can readily convince himself by experiment upon the cadaver, on forcing air through an aspirating needle and distending the abdominal cavity but moderately; dullness over these organs at once disappears, except in rare cases where they are cemented by inflammatory adhesion to the abdominal wall.

Of course, gas free in the abdominal cavity is found after perforation at any point of the alimentary tract, and even if it is determined that there has been a perforation, its location, before operation, is open to great uncertainty; but I have no doubt in the vast majority of cases the location of severest initial pain, or the point where the pain begins, will be found to be near the point of perforation; and I believe, unless positively contraindicated, we should make our exploratory incision with reference to it.

It has been my fortune to see, within a short time, two cases of perforation of the stomach, the first one in the care of Drs. R. J. Walker and J. D. Ely of Toledo, O. A domestic, nineteen years old, who had always been well prior to what was at first considered to be a severe attack of colic (the pain was most severe in epigastric region). The girl had been about her usual household duties up to the time of the attack, and feeling as well as usual. Had never complained of any disturbance of the stomach. The abdomen began soon to distend, and the diagnosis was changed to peritonitis and the patient treated accordingly. *At no time was there vomiting.* The case continued to go on badly, and I was called in on the evening of the fifth day with view to operation. I found the patient suffering severely with greatly distended abdomen, especially in epigastric space. Tympanitic note over liver and spleen well marked. I diagnosed perforation of the intestinal tract somewhere, but did not place sufficient stress upon the fact of the severe pain over the stomach to even think of locating it there. The patient was evidently dying, though her mind was clear; and though she urged me to operate, evidently recognizing her desperate condition, I felt compelled to decline, and she died four hours after my visit. On post-mortem next day, a perforation as large as a copper penny was found

upon the anterior wall of the stomach near the cardiac extremity. The stomach contents were largely in the peritoneal cavity. The mother of this girl died in a similar manner. Had a correct diagnosis been made sufficiently early, I am convinced she would have had a fair chance for recovery by operation, for the perforation could have been reached without difficulty.

The second case I saw a month since with Drs. McVety and Minton at Toledo Hospital. The patient, a Pole, thirty-two years of age, a laborer, had all the evidence of robust health—a hearty, well-nourished, fine-looking fellow. Had complained for some time, however, with some stomach disturbance, but not severe enough to interfere with his labor or his food. Was suddenly taken down with severe pain over epigastric region. The abdomen began rapidly to distend. After forty hours from the onset of this attack, I was called in consultation with a view to operation for peritonitis. I found the man evidently dying. There had been no history of vomiting, except at the onset of the attack. Tympanitic note over the liver and the spleen well marked, and a diagnosis of perforation at some point was made. The man died within an hour after I first saw him. A post-mortem revealed a perforation on the anterior wall near the pyloric extremity, a point which might have easily been reached by operation.

I find another case reported in the *American Medical Compend* for April, 1895, by Dr. Dickey, of Tiffin, O., which presents almost exactly the same line of symptoms. The doctor was called in consultation to see a healthy, vigorous Irish farmer, fifty-seven years old, who, up to the hour of his illness, had been in exceedingly good health. Said he "had never felt better in his life." Was seized with sudden severe pain in the abdomen. In this case there was vomiting. A diagnosis of intussusception was made by the attending physician. When

Dr. Dickey reached the patient, he was dying; was past all hope of good from operative interference. He died in two hours afterward. "Post-mortem revealed an ulcer the size of a five-cent piece near pyloric extremity on anterior surface, with clean-cut edges, as though cut out with a saddler's punch."

I have also notes of yet another case with almost exactly the same history, occurring in Toledo, but these three cases illustrate sufficiently the points I desire to make in this paper. I am convinced that perforating ulcer of the stomach is much more common than is generally supposed, for here are four cases occurring within less than a year, three of them under my own observation in Toledo, and the other within but a few miles from that city. In not one of these cases was an accurate diagnosis made of the condition before death, though in the hands of very competent physicians. It would seem from post-mortem appearances that if a diagnosis could have been made early enough, and an abdominal surgeon of even moderate skill had operated at once, these cases would have stood fair chance for recovery.

It would further appear that the careful consideration of a few diagnostic symptoms ought to lead to correct diagnosis. Tympanitic note over liver and spleen will indicate gas free in the peritoneal cavity, and necessarily perforation at some point. In all of the cases mentioned there was severe pain over the epigastric region, and I believe it to be true that when a perforation has taken place, the point of severest pain is near it. *Absence of vomiting, with evident peritonitis, is certainly significant.* These symptoms, together with a rapidly rising pulse, and evidence of severe abdominal illness, ought to lead, without delay, to exploratory incision.

A REVIEW OF THE AUTHOR'S METHOD OF ANCHORING THE KIDNEY.

R. HARVEY REED, M. D., COLUMBUS,

Professor of the Principles and Practice of Surgery and Clinical Surgery, Ohio Medical University; Surgeon to the Protestant and University Hospitals.

The frequency with which surgeons meet both floating and movable kidney, has long since attracted attention as to the best method of anchoring this organ so as to preserve its normal functions. The multitude of complex disturbances and reflex symptoms associated with a floating or movable kidney, are such that the surgeon is constantly called upon to render relief. These abnormal conditions may last for years without serious results, yet they are liable to give rise to degenerative changes which may necessitate a nephrectomy or a nephrotomy at any moment. Palliative treatment, by means of rest and bandaging, as a rule, avails but little. The difficulty of holding a kidney in place with a bandage, is such that little reliance can be placed on this method of treatment.

From the fact that this abnormal condition is chiefly a source of annoyance rather than danger, patients hesitate in submitting to an operation for the purpose of anchoring the kidney, as it seems to them like a very large undertaking for the purpose of accomplishing

very small results. It is hard to make them understand the importance of having the kidney anchored and the danger that is likely to arise from neglect of the proper surgical treatment. At the same time we can hardly blame them or their family physician for not urging an operation which requires a large oblique gash through the lumbar muscles and a number of buried sutures which are difficult to insert. Only those who have attempted to perform this operation can appreciate how hard it is to hold the kidney in place by the old-fashioned method until it is sutured to the deep muscles of the back. The difficulty of this procedure stimulated me to devise a new operation which had for its object, simplicity, rapidity, and efficiency.

Referring to a paper read before the Columbus Academy of Medicine, November 19, 1894, on "A New Method of Anchoring the Kidney," published in the *Columbus Medical Journal*, December 25, 1894, you will find that my operation consists "in making the ordinary perpendicular abdominal incision over the median line of the kidney. As a rule, it need not exceed two and a half inches in length, depending largely on the thickness of the abdominal walls. Having made the incision sufficiently large to get the fingers in and bring the kidney to its normal place, I then use a long needle which I have had made on purpose, seven inches in length. Two of these needles are threaded with aseptic silkworm gut or aseptic silk, using but one ligature. Having placed the kidney in its normal position (and in the case of a floating kidney scored the peritoneum so as to favor adhesions), I now insert my first needle through the upper and inner part of the cortical substance of the kidney directly through the muscles of the back, bringing it out between the eleventh and twelfth ribs. The second needle, which is on the other end of the ligature, is also passed through in a similar man-

ner, about an inch from its fellow, through the upper and outer cortical substance of the kidney, making, as you will recognize, a staple stitch. These ligatures are tied on the integument of the patient's back by an assistant. If necessary, another suture is inserted in a similar manner through the outer margin of the kidney, the first needle of the second suture being passed about an inch below the last needle of the first suture, and the second needle of the second suture about an inch below the first needle of the second suture, through the cortical substance of the outer portion of the kidney."

You will readily see that this is a very simple operation, does not involve any vital structures, and can be performed in a few moments, with little or no danger to the patient, while the results have been even more than anticipated. In explaining the method I had adopted to my friends, I found but practically one criticism, and that was a lack of confidence in obtaining satisfactory results. Recognizing the fact that it required several sutures, by the old method, to hold the kidney in place, they did not see how it was possible for one or two sutures to accomplish the same. If you stop to study the difference between the two methods, you will readily observe that the new method "clinches," so to speak, the kidney by a staple suture, while the old method simply sutured the posterior portion to the deep lumbar muscles. The merest tyro will readily see the mechanical difference between the two sutures. The one not only embraces the entire kidney, but pierces the lumbar muscles and is re-enforced by the integument on the back, while the other simply involves a portion of the friable cortex of the kidney and a small portion of the tenderloin; hence it is quite evident that more sutures would be required by the old method than the new.

Since devising this plan for anchoring the kidney, I have had an opportunity for demonstrating its practical

utility in five* cases operated by myself and one by my colleague, Dr. Means, with the most satisfactory results in each case. The rapidity with which the operations were done is one of the marked features. It is only necessary to make a very small opening into the abdominal cavity, bring the kidney to its normal position, pierce it with the needles, as above described, tie the sutures over a piece of iodoform gauze on the back, and close the abdominal wound. There are seldom any constitutional symptoms following the operation. The patient has little or no pain or rise of temperature, while the pulse remains practically normal. In about ten days the suture can be removed, leaving the kidney entirely free from any foreign substance. I usually have the patient remain quiet from two to three weeks after the operation.

Up to date there has not been a single instance of a return of the disease, so far as I have any knowledge, the patients are all enjoying good health, and are entirely free from the reflex symptoms which were so annoying prior to the operation. In two of these cases it was my fortune to have an opportunity to examine the result; in one case several months afterwards and the other nearly two years. In each case the patient had to be operated for ovarian trouble, and in each I made a careful examination of the kidney which had been anchored, and found it firmly fixed, and, so far as I was able to judge, in a perfectly healthy condition.

I do not claim that the few cases which I have reported are sufficient to establish the fact that this method is without fault, but I do claim that up to date the results secured are better than those usually obtained by other methods.

* The author operated his sixth case, at the University Hospital, during the recent meeting of the Ohio State Medical Society, which made a prompt and uneventful recovery, making a total of seven cases with seven recoveries by this method.

DISCUSSION.

DR. RANSOHOFF:

I would like to ask the essayist, before he takes his seat, how long standing are his oldest cases?

DR. REED: About two years.

DR. RANSOHOFF: We have certainly had presented a very interesting method of anchoring the kidney. The essayist has spoken of anchoring the kidney through a two and a half inch incision. I doubt very much whether the most skillful operator living can always anchor the kidney by laparotomy through a two and a half inch incision. It is much like the laparotomy devised by Morris through an inch and a quarter incision. The inch and a quarter incision is very well, but if you need a longer incision you will make it longer. There is one decided objection, in my mind, to anchoring the kidney in the manner which has just been described. One thing I have found must be kept intact, and that is the layer of peritoneum in front of the kidney, if possible, because there we have all the blood-vessels and all the nerves to the colon, and if we do not have gangrene of the colon from inclusion in the ligature of some of these vessels, we will have obstruction from the inclusion of some of the nerves to the colon. The new feature is, chiefly, making a laparotomy in anchoring the kidney. The operation of suspending the kidney to the last rib is not new. I have done it and others have done it, and we can certainly attach the kidney to the last rib better by the old method of going in through the loin than by the new operation. One good feature in the old operation is lost in this operation. In the old operation the posterior surface of the kidney was scored, the capsule of the kidney deflected to one side and then to the other, sewed to the fascia and adhesions produced which were as broad and as long as the kidney, possibly, which bound down the kidney much more thoroughly than is possible by a single suture. The author has spoken of the long incision necessary in the loin. That is not a dangerous thing. It certainly is not as grave as running the risk of including a portion of the blood-vessels and nerves in the suture. I have seen nothing in the report of the new operation that would lead me to change my method

of anchoring the kidney, either when we have an idiopathic case of floating or movable kidney or one made floating or movable by some known cause. Most cases do well for a few months or a year, but after that there is a tendency to relapse.

DR. HALL:

I want to emphasize some of the statements made by the last speaker, especially the point of possible danger from including in the ligature, in the new operation, a portion of the peritoneum containing nerves that supply the colon and thereby producing intestinal obstruction from paralysis. While this is theoretical—because there are no cases on record of that kind—it is a danger that must stare every operator in the face, and a danger that, when it does occur, will certainly invite a funeral after the operation. Next, it occurs to me, theoretically, that in fixing the kidney as described by the essayist, the adhesions taking place from the inflammation could not and would not be as strong as those in the old operation, especially where the kidney is fixed to the last rib by the stitch, and then the capsule included in four or five stitches to the fascia of the muscle, as described so plainly by the last speaker. The old operation to me has been satisfactory, and notwithstanding the low mortality of opening the peritoneal cavity, I believe the old operation would be the safer.

DR. REED:

I want to thank the gentlemen for the kind criticism they have made of my paper, but it does seem to me the proof of the pudding is largely in the eating. Dr. Hall says he thinks the old operation is safer. I have had 100 per cent. of recoveries. If he can get anything safer than that, I would like him to produce it, if it is from Cincinnati. The point brought out by Dr. Ransohoff regarding paralysis from impingement on the nerves, I think is not tenable, because we may take out several feet of the intestine and the patient recover. We don't make any such desperate operation when we anchor the kidney. Suturing to the back, by the old-fashioned

method, we all admit can be done and has been done, and the results have been good, but I am quite sure every operator who has attempted to operate by the old method has had a good deal of difficulty in holding the kidney in its place while operating. I think we all believe Professor Senn is as skillful in this work as anybody in this country, and I have seen him have considerable difficulty in getting one single stitch in a kidney. I have seen good operators obliged to open the abdominal cavity in front, in order to get the kidney into its place, and hold it there—that is one of the serious objections to the old operation. It is not a question as to whether we *can* suture it by the lumbar method, as a rule, but the difficulty is to hold it in place until we can get it anchored. Then you run the risk of tearing the parenchyma of the kidney, which I have seen done by skillful operators in the old operation.

I do not claim the new operation can always be done through a two and a half inch incision, but usually it can be done through such an incision. As in other operations, the operator should have sufficient room. In a thin person such an incision is ample.

Now, as far as the paralysis of the bowel is concerned, I can readily recognize that if an operator were so awkward as to suture the intestine in with the kidney, there would follow intestinal disturbance, but I can hardly understand how it would be possible to have intestinal paralysis when we simply pass the needle through the kidney and out through the back. Our friends, the gynecologists, go in and stir up the bowels and take out the uterus, ovaries, tubes, etc., and still do not have paralysis. I think the argument set forth by Dr. Ransohoff is not quite tenable. At the same time, I do admit that the old-fashioned way will answer. We rode in the street-car drawn by horses when we did not have electric cars, and we got along very well; but, since we have electric cars and can ride a little faster, I think it is just as well to take them. The new operation is more easily performed, and up to date the mortality I think has been as low as can be shown by any other method of anchoring the kidney.

THE SURGICAL TREATMENT OF TUBERCULAR LESION.

JOSEPH RANSOHOFF, M. D., F. R. C. S., CINCINNATI,

Professor of Anatomy and Clinical Surgery, Medical College of Ohio (Medical Department University of Cincinnati).

In accordance with the request of your Secretary, I beg to direct your attention to a subject which always interests the general practitioner as well as the surgeon, since sharp lines cannot be drawn between the lesions that belong to internal medicine and those that form the proper field for surgical interference. There are two regions, however, in which tuberculosis manifests itself more often than anywhere else, except in the lungs, and that is in the lymphatic glands and in the articular ends of bones and joints. It is therefore to these two regions that I would beg particularly to direct my remarks upon the surgical treatment of tubercular lesions.

TUBERCULOSIS OF THE LYMPHATIC GLANDS.

For practical purposes all the chronic inflammations, so called, of the lymph nodes of the neck, formerly denominated scrofulous, may be considered tubercular. Their prevalence in the neck, as is well known, results from secondary infection on primary lesions of the nasal pharynx, tonsils, nasal passages, scalp, or ear. As a rule, tuberculosis here is localized. In the 148 cases analyzed by Fraenkel, the lungs were affected in only 15. In 72

out of the 148 cases the general health was not even impaired. With such local manifestation of general disease, it is the fit province of surgical treatment. Much consideration, it is true, must be given, as in all forms of tuberculosis, to hygienic and medicinal treatment. The preparations of iodine, iron, cod-liver oil, and more recently, creosote, have all been found useful when caseation has not taken place. The injection of iodoform has likewise at times been followed by good results.

There is a large number of cases in which, despite local and systemic therapy, the condition remains unchanged, or progresses in regard to the number of glands involved and the tendency to early caseation. Certain it is that in these the operation of complete excision rests on sound surgical principles. While but few of the glands are involved and the periglandular structures are free, the operation is simple in the extreme, and, with proper precautions, is devoid of danger, Lindenbaum reporting ninety-four operations without a death. The two sides of the neck may be operated on at separate sittings, and practically all the deep-seated lymphatics may be removed. The remaining cicatrices, though they may extend from ear to sternum, are linear, and far less disfiguring than those resulting from spontaneous cure after prolonged suppuration. Nor can the operation be said to be especially difficult when the entire chain of the deep-seated lymphatics is involved, unless extensive sinuses or widespread infiltration of periglandular tissues exists. To shell out one gland after another until it is believed all are removed uselessly prolongs the operation and enhances its difficulties. By an incision extending from above the uppermost to a point below the lowermost gland, the entire anterior surface of the chain should be freely exposed before any attempt to remove a gland is made. With a small four-pronged hook the uppermost gland is then drawn into the wound,

the air penetrates the loose connective tissue behind it, and with a little traction on the hook, and here and there the division of a few fibers with the scissors, it is lifted from its bed. If possible, the connection of the gland with that below it should not be divided. Traction on this interglandular tissue exposes the next gland, which in turn is seized with the sharp hook and drawn forward. and thus the way is prepared for seizure of the next gland underneath. In this manner, by an incision made from mastoid process to clavicle, I have within three years, in very many operations, removed the entire chain of deep-seated lymphatics from one or both sides in a surprisingly short time without either death or serious complication. The hemorrhage while the glands are movable is not profuse, and is easily controlled by pressure-forceps or by ligature. In three of my cases the internal jugular vein was wounded. In 128 cases reported from Billroth's clinic by Fraenkel, the jugular had to be tied in sixteen.

A danger not to be overlooked in the operation on the parotid lymphatics is the division of the facial nerve. This followed an operation by one of my assistants at the Cincinnati Hospital. The patient was a mulatto child of six years from whom I had removed the entire chain from the right side of the neck at a previous operation. The paralysis, while complete, was of comparatively short duration. Fraenkel observed facial paresis after eighteen operations, but in only six was it permanent. In 104 cases operated on in Luecke's clinic paralysis ensued in four. In two of these it soon disappeared, but in two it continued for three years subsequently.

The difficulties and the perils of the operation are increased, not so much with the number of glands involved, as with the extent of the periglandular infiltration. When suppuration has taken place in and about many

of the glands, the operation may become, from adhesion to important veins and nerve trunks, quite formidable. Indeed, at times it may be wiser to leave part of a suppurating gland than to incur the risks of complete extirpation. After thorough curetting it may be safely left to granulate under an iodoform gauze tampon, while the remainder of the wound is closed by sutures in the usual way. In my judgment no part of a caseating tubercular gland ought ever to be buried in a closed wound. To do so would expose the patient to all the dangers of auto-infection of contiguous tissues which were incident to the older methods of removing the caseous foci with a curette, leaving apparently healthy gland tissue and capsule as infallible sources of reinfection.

When cervical adenotuberculosis is associated with tuberculosis elsewhere, an operation is contraindicated, as it is also in the acute forms of the disease in which high temperature and rapid extension downward indicate a malignant type. Nor should an operation be counseled in the very young. Fortunately, according to the observations of Schnell, Haehl, Kish, Lebert, and others, the majority of cases are encountered between the ages of six and twenty, and at a time of life when even extensive operations are safely borne. The measure of success following the operation is determined by the time at which it is done. Even without selection of specially favorable cases, extirpation is followed by most gratifying immediate and final results. When suppuration has been absent before the operation, the wound is permanently healed in from two to three weeks. Local return after a period of three or more years occurs in less than 10 per cent. of these cases, and reappearance of the disease elsewhere in only 4 per cent. In from 57 to 70 per cent. of all cases the operation is followed by complete and permanent recovery.

TREATMENT OF TUBERCULAR ARTHRITIS.

The treatment of tubercular arthritis must be based on the natural tendency of the disease towards recovery. With or without deformity, such recovery ensues in disease of the spine—for example, where operative interference can rarely be resorted to early. Conservatism, therefore, must be the keystone of treatment, and only in the failure of this must resort be had to active interference. Since tubercular arthritis is but the local expression of an infectious disease, general measures are not to be overlooked. An abundance of fresh air, suitable diet, attention to cleanliness, are of first importance. Internal administration of guaiacol and of creosote have been found to be beneficial in the hands of very many continental surgeons. The modified tuberculin treatment has also been followed by excellent results.

The local treatment of tubercular arthritis should, in the first place, be directed towards securing absolute rest to the joint. A prolonged rest in bed will oftentimes relieve pain, reduce the swelling, and, even if prolonged through many months, will not interfere with the nutrition of the patient. Local rest is best obtained by the use of a retentive dressing of starch or of silicate of soda, applied with sufficient snugness to distinctly compress the distended joint. In the joints of the lower extremity, except the hip, and of the upper, except the shoulder, and in tuberculosis of the spine, such retentive dressings are often the most serviceable of the methods of treatment to be invoked.

In the inception of the disease, extension also is very serviceable, particularly in overcoming the tendency towards the contracture of the flexor muscles. During the acute stages such extension can be best maintained with the patient in the recumbent posture, whereas

later some form of traction splint can be successfully used. In tubercular arthritis of the upper extremity the use of extension is far less valuable. When the contractures are firm enough to resist extension, an open division of the contracted parts should be made.

In very many cases it is advisable to directly attack the tubercular disease by agents which distinctly destroy the bacillus or unfit its soil for necessary sustenance. Such agents are the chloride of zinc, and particularly iodoform. The direct injection of either of these agents into a tubercular focus at intervals varying from four or five days to as many weeks will often obviate the necessity of a more or less crippling operation. The chloride of zinc may be used in the saturate or 50 per cent. solution, and from four to five mimins injected. The iodoform may be used in 10 to 20 per cent. solutions of glycerine or olive-oil, and injected in quantities varying from one-half an ounce to three ounces. The iodoform solution should always be sterilized by submersion of the iodoform during four days in a 1:1000 solution of corrosive sublimate; it should then be thoroughly washed in sterilized water. The glycerine, and particularly the oil, should also be sterilized by boiling. The best results obtained by the iodoform oil injections were those of De Vos, of Leyden. Of sixty-eight cases, 72 per cent. were discharged cured. The injection should be made through a large trocar, after preliminary incision through the skin. After whatever fluid may be contained within the joint has been expressed, the iodoform oil or glycerine is injected and by manipulation brought in contact with all portions of the joint. The shoulder-joint is to be punctured a half-inch below and behind the tip of the acromium, the elbow-joint on the outer side of the olecranon and above the head of the radius, the wrist below the styloid processes of radius and ulna, nearer the dorsal surface. In

the hip the needle should be made to penetrate from behind and above the trochanter; the knee can be directly penetrated through the interarticular line on each side of the patella; the ankle-joint is most easily reached through a point directly in front of the tip of the external malleolus. When many fibrinous shreds come away through the canula it is advisable to freely incise the joint, with proper aseptic precautions, and to thoroughly irrigate it with a saturate boric solution before making the iodoform injection. If need be, the incision can be sufficiently enlarged to make the operation exploratory, the incision being closed immediately after the injection has been completed. For the cure of a tubercular arthritis from three to twenty injections may be necessary, and the time required to effect a cure vary from two months to one year. The hydrops tuberculosis will often disappear under rest and compression. In the failure of this, aspiration should be resorted to, and this be followed by the injection of carbolic acid or iodoform.

The so-called "cold" abscesses require especial attention in many cases, although when they are limited in size they may be allowed to take care of themselves. Through defective operative treatment, septic infection, which may rapidly be destructive to joint life, has often been introduced in the past. Here also the injection of iodoform after the preliminary tapping and irrigation is frequently followed by a brilliant success. The size of the abscess is no indication of the extent of the lesion which gave it origin. Its walls are lined by a quasi-pyogenic membrane, which, as Volkmann has shown, is studded with miliary tubercles. When the iodoform injection, after repeated attempts, has failed of success, the abscess should be thoroughly incised, its walls cleared of the tubercular lining with a sharp spoon, or, what is preferable, the operator's finger

wrapped in sterilized or iodoform gauze. This operation should be considered incomplete until the aperture of communication, which usually, though not always, is present between the abscess and the joint interior, has been discovered, enlarged if need be, and the joint treated by injection. These conservative measures will frequently fail of encompassing a cure, or even of stemming the progress of the disease. In cases from the lower walks of life the conditions, when first seen, may altogether preclude conservatism. Operative measures of greater or less extent are then called for, the object of which is the mechanical removal of the tubercular tissues and of carious bone and the procuring of a surgically clean wound, with its natural tendency to immediate union.

Sometimes there can be detected in the head of the tibia, the femoral condyles and the ulna, a tuberculous nodule which can be removed through an incision that does not involve the joint. In the removal of such a nodule the chisel should be carried through sound bone, and, as far as possible, the infection of this from the tuberculous center is to be avoided.

In the great majority of cases the operative treatment cannot stop short of a free incision into the joint, thus making it in a measure exploratory. Such free incision, technically termed arthrotomy, with proper precautions is devoid of danger. When thus thoroughly exposed the tubercular foci can be readily removed, and if the procedure has not been too long delayed, without seriously affecting the outlines of the joint surface. This operation, known as arthrectomy, or joint erasion, means the removal usually of fungous masses from the synovial membrane, of the necrosing and interarticular cartilages, so far as they may be diseased, of the capsule and synovial membrane, if need be, and the evacuation with the chisel or sharp spoon of tubercular

foci in the epiphyses. The operation is, therefore, in reality an atypical resection. In joint erasions recourse should be had to cutting rather than to scraping instruments, since the danger of infecting the wound with tuberculosis is thereby reduced to a minimum. After the erasure has been completed, sterilized iodoform is to be introduced into the wound, the articular wound closed by deep sutures and the cutaneous wound in the ordinary way. Drainage is not ordinarily called for, although when oozing has been checked with difficulty the silkworm-gut strand drawn through the wound will answer well for drainage. Many surgeons pack the wound for two or three days with iodoform gauze, after which the sutures introduced at the time of the operation are tightened. Even the heads of the humerus and of the femur have thus been successfully freed of tubercular nodules and of their necrosing cartilage, and returned to their respective sockets and excellent results obtained. A further advantage of arthrectomy is the ease with which the operation can be repeated if necessity arises, and the important fact that by not interfering with the epiphyseal cartilage the growth of the bone in length is not curtailed.

Resection for tubercular arthritis, formerly very extensively practiced, for good reasons is less and less employed. Until the period of puberty has been reached a formal excision should rarely be performed, since the removal of the epiphysis is invariably followed by very great shortening of the extremity. It is only after arthrectomy as above described has failed in children and in young adults that formal excision should be at all practiced. In persons who have arrived beyond the age of puberty, the same objection not obtaining, excisions are more frequently to be made. At this period of life repair, so far as bone is concerned, is less easily accomplished, and the uneven surfaces which remain after

arthrectomy might fail to unite ; therefore, in the knee, for example, we are sometimes compelled to make a formal excision in order to insure speediest recovery with a useful limb.

As a rule, however, excision for tuberculosis of the larger joints should be reserved for the correction of deformity after the tubercular process has healed spontaneously or through the methods of treatment, operative and otherwise, above described. In tuberculosis of the wrist and of the foot total excision of the bones involved is to be resorted to rather than the excision of the tubercular focus and its evacuation by curette or chisel. It is particularly in these cases that operative infection of contiguous joints and of overlying tendon sheaths is likely to occur. Even in the absence of such infection the shell of bone which is left after the excision of the tubercular focus is filled with a clot which readily becomes infected, and in the contrary event is difficult of organization. In severer cases of tuberculosis of the bones of the wrist, and particularly of the tarsus, amputation will often afford the patient the quickest and safest road to recovery. Amputation must likewise be resorted to at times in children in whom the tubercular and secondary suppurative processes have left the region of the joint riddled with sinuses and the bones destroyed over extensive areas. In the lower extremity such amputations must be made oftener than in the upper, but in both, with the improved surgical technique of recent years, the mortality following them has been reduced to a minimum.

SOME OF THE ACCIDENTS OF CATARACT OPERATION.

B. L. MILLIKIN, M. D., CLEVELAND,

Professor of Ophthalmology, Medical Department Western Reserve University, Ophthalmic Surgeon to Charity and Lakeside Hospitals.

While the operation for cataract is one of the most successful and brilliant in surgery, unfortunately too often some unforeseen condition or circumstance renders nugatory our best planned endeavors.

A consideration of some of the accidents of cataract operation may be of much interest, and serve us better as instructors than many successful cases. Stumps and stones on the hillside make us careful "coasters." For our purpose we divide the accidents of cataract operations into two classes, first, those occurring at the time of operation, and second, those occurring after the operation. Of the first class we have:

1st. The iris falling before or upon the knife-blade. While this is a disagreeable accident, it is by no means a very serious one. Occasionally, after the puncture and counter-puncture have been made, the iris falls in front of the knife-edge, which, unless it can be dislodged by a little manipulation, will be cut through in completing the flap. Ordinarily if this is done it only requires the iridectomy to be completed, and detached pieces of the retina to be removed. I have never seen any serious trouble from this accident, and by completing the iridec-

tomy not even a bad cosmetic effect is likely to remain.

2d. The incision in the cornea may be too small to admit of the escape of the lens. This is a somewhat awkward accident which occasionally occurs. It should always be remembered that nothing conduces to the easy expulsion of the lens so much as a good generous flap. When one is so unfortunate as to make a mistake of this character, the only procedure permissible is to enlarge the wound, preferably with a pair of sharp scissors.

3d. Escape of vitreous. This accident is an infrequent one, is largely predisposed to in cases of fluid vitreous, and usually in these cases the results are likely to be unsatisfactory. Occasionally in conditions of normal vitreous too much pressure in endeavoring to remove the cataract, or the edge of the hard lens forcing itself too strongly against the posterior capsule, ruptures this membrane and permits of the escape of a greater or less quantity of fluid. The escape of vitreous is by no means a very serious accident, and not infrequently with the loss of a considerable amount of this material the eye goes on to uninterrupted recovery, with good vision. If there is reason to suspect fluidity of the vitreous, great care must be exercised in all the details of the operation. This condition may be suspected in cases where there has been a history of old choroidal trouble, and occasionally in cases of very long standing, or old cataracts. In the operation of these cases, a free incision should be made with the flap very near the corneal margin, and I believe the chances are preferable for successful results by doing an iridectomy instead of the simple operation. In the presence of this accident the prompt removal of the lens with a wire loop, followed by the least possible amount of manipulation, with the prompt application of compress and bandage, in order to obtain the pressure from the

latter, will aid very materially in preventing possible subsequent hemorrhage.

4th. Luxation of the lens. If the incision has been small, or if we have a large lens and the lens is underripe, with strong attachments to the capsule, and occasionally also in the simple operation where the border of the lens is held down by the iris, the force necessary to dislodge the lens and to compel it to engage at the flap opening sometimes will result in a dislocation of this body into the vitreous. Under such circumstances, the prompt removal of the lens with a wire loop must be resorted to, and otherwise treated in the same manner as the escape of vitreous above.

5th. Hemorrhage. A too frequent accident is that of hemorrhage after these operations. The hemorrhage may be of two varieties, that from the iris and that from the choroid. Occasionally, after iridectomies, we have somewhat profuse hemorrhage from the wounded iris which is sufficient to fill the anterior chamber, flow out through the wound, and, perhaps, rupture the capsule into the vitreous. Again, either with or without the escape of vitreous, we may have sudden very profuse and destructive hemorrhage following immediately upon the removal of the lens, or even before the removal of the lens, the diminished tension resulting from the incision causing the rupture of the choroidal vessels with large hemorrhage. Almost without exception, and certainly in cases of profuse hemorrhage, the cases of hemorrhage from the choroid lead to prompt and disastrous results. In the cases of hemorrhage from the iris, the application of cold over the closed eyelid, together with pressure for a short time, will usually stop the bleeding. If the anterior chamber is then found to be full of blood, it can often be removed by opening the wound and by manipulation removing the clots of blood, or these may be washed out with a very dilute solution

of bichloride. Even should a considerable amount of blood remain in the anterior chamber, under the pressure from the bandage this will be very rapidly absorbed away, and leave no permanent trouble. In such cases, however, atropine should be used in order to keep the pupil fully dilated, and the iris out of possible danger of inflammatory attachments.

6th. Prolapse of the iris. In the simple operation for cataract it is exceedingly important upon completion of the operation that the iris should be replaced in its normal position. This may readily be done, as a rule, by means of the spatula, or spoon. Sometimes, however, there is a persistent tendency for the iris to become involved in the wound, or to present itself at the opening, and it fails to remain, therefore, in the proper position. If this condition occurs it will be much wiser to do an iridectomy at once and avoid the almost certain tendency to prolapse that follows later.

7th. Infection. The basis of all modern antiseptic surgery has been to avoid infectious contamination during operation, and the contest has been waged vigorously during many years in this direction. This is by all odds the most serious problem in the operation for cataract as well as for other surgical procedures. Therefore every precaution as to cleanliness must be taken in these operations. One must have regard not only to all instruments which come in contact with the eye, but all fluids used for the purpose. Every appliance and apparatus, the hands of the surgeon himself, and even the conjunctival cul-de-sac, must be surgically clean. Notwithstanding all the precautions we are able to take, occasionally these wounds do become infected, and lead to serious results. Most fortunately, for some reasons which are not thoroughly understood, the aqueous humor and the tissues of the anterior portion of the eyeball are not easily infected, so that we have a certain

amount of immunity to the inroad of infectious materials. Not so, however, is the vitreous body, as it seems to be a most fertile field for infection.

After an operation has been completed, for some days cataract cases are liable to certain accidents of more or less grave importance, which it is of interest to consider. These are of various kinds, and may be enumerated as follows :

1st. Prolapse of the iris. In recent years the beautiful, simple operation for cataract, which is certainly a most ideal result, aiming to leave the eye as little disturbed after the removal of the cataract as possible, with no cosmetic defects, has been very widely performed. Certainly in the majority of cases the operation is a most brilliant one, and gives results all that could be desired. Unfortunately, however, this operation has not been so thoroughly perfected but that these cases are all liable to prolapse of the iris, followed by more or less severe disturbance and bad results. A not inconsiderable proportion of cases operated upon results in more or less prolapse, with misplacement of the pupillary area, and consequent defect. This accident may occur at any time from the operation to a period several days remote, so that we are not at all sure of the ultimate results of our work, at least until the wound has thoroughly healed, which is usually several days after the operation. In case this accident occurs there are two methods of procedure with reference to it.

In the first place, if the prolapse has been large, coming on within twenty-four or thirty-six hours of the operation, a few drops of a four per cent. solution of cocaine may be instilled into the eye, the prolapsed iris removed, and the eye allowed to take its course the same as if an iridectomy had been originally performed. A second plan of dealing with it is to let it alone. In moderate degrees of prolapse usually there will be

no serious trouble, and even in somewhat considerable amounts of prolapse it may be safe to allow nature to take her course. These enlargements will gradually diminish in size, will often melt away entirely, and after some weeks leave a fairly free, smooth external surface, and recover perfectly well with simply a displaced pupillary area. As a rule the visual results in these cases are fairly satisfactory.

2d. Hemorrhage. Of all accidents occurring subsequent to these operations, the most dreaded, because the most rapidly disastrous in their results, are hemorrhages from the retina or choroid. These hemorrhages may occur at any period for several days subsequent to the operation, but are most likely to come on within a few hours. They result, as a rule, in complete loss of the organ, especially if of any magnitude. They occur indifferently in cases where the vitreous has been lost or not. Of course the immediate cause is the diminished tension following the wound There is always, however, probably a diseased condition of the arterial vascular structures, they not infrequently occurring in old rheumatics, or in eyes that have been subject to extensive structural changes. Occasionally the hemorrhages are so severe as not only to destroy the organ of vision but to threaten life from loss of blood. In such excessive cases the only procedure would be prompt removal of the eyeball. In very moderate cases much can be done to diminish the hemorrhage by applications of ice compresses, by elevation of the patient to the sitting posture, as has been particularly recommended by Dr. Jackson.

3d. Not infrequently accidents of more or less gravity result from the restlessness of the patient, or striking against foreign substances, such as the hands, bedposts, tables, etc. It is therefore important that the patient should be kept quiet for at least twenty-four hours sub-

sequent to an operation, and in certain cases it may be advisable to fasten the patient's hands so they will not reach the head. To avoid the restlessness and discomfort which patients undergo lying in bed, I believe it most desirable to frequently change their position, either by turning to the sound side, by propping them up, and never, except in rare instances, keeping a patient in bed longer than twenty-four hours. Elderly people, particularly, undergo confinement in bed badly.

4th. Infection. This accident may occur at any time for ten days or more subsequent to an operation. Its results depend upon the virulence of the poison, and may ultimately produce no serious trouble, or even complete loss of the organ. As indicating tardy infection in these cases I should like to report very briefly the following case: On the 21st of May, 1891, an upward flap extraction with an iridectomy was made on Mrs. B. U., 75 years of age. Ten days later the second eye was operated upon in a similar manner, the first having sufficiently recovered to be, as I supposed, entirely out of danger. Four days after the operation on the second eye, the dressings on this were removed, and the eye found to be doing perfectly well, with very little congestion of the conjunctiva, and no corneal disturbance. This dressing was followed within some hours by a sensation of discomfort, pain through the side of nose and head, with much weeping. Upon removing the dressing the eye was found much inflamed, the cornea opaque, hypopyon, evidently a condition of severe infection. How this infection could have occurred, or where it came from, has always been a mystery. The case went on to a purulent conjunctivitis, with profuse secretion, infiltration of the cornea over a large area, and loss of the eye with the exception of light perception. Notwithstanding the most active treatment, and the greatest precaution with reference to the other eye, this also

became infected, was followed by purulent conjunctivitis, slight infiltration of the cornea, but ultimate fair recovery with a vision of $\frac{4}{15}$.

Of disastrous results from hemorrhage, the two following cases may be cited. Mr. P., about 70 years of age, a thin, pale, frail man, had lost one eye by operation previously, the operation having been performed by another surgeon. The operation for extraction was made by upward flap with an iridectomy, there being slight loss of vitreous, evidently of a fluid character. The night after the operation there was a slight amount of hemorrhage, sufficient to stain the dressing, not at all profuse. Upon removing the dressings the next day, it was found that a portion of the vitreous body had been pushed out, the hemorrhage having evidently occurred along one side of this body. While no more bleeding resulted, still the eye was so badly damaged that no favorable result occurred.

Case III. Mrs. E., 75 years of age, a strong, rugged-looking Swede, was operated upon a little over a year ago by upward flap extraction without an iridectomy. There was nothing in the history of the case nor in the appearance of the eye to indicate any serious trouble. The cornea was clear, little or no arcus senilis, tension good, light perception and projection normal, certainly what one would believe to be a favorable case for operation. No accident occurred at time of operation, the iris was properly replaced, leaving good central pupil. There was no loss of vitreous. Some ten or twelve hours after the operation the patient was seized with severe pain through the side of the head, and very shortly the dressings showed evidence of hemorrhage. The hemorrhage did not prove to be a large one, but was quite sufficient to destroy the organ for visual purposes. So far as we know, there was no accident to the

eye and the patient was perfectly quiet and careful in every way.

These three cases serve to illustrate the severity of many of these accidents.

DISCUSSION.

DR. HOLMES:

I wish to raise my voice against the frequent adoption of the simple operation for cataract extraction. I know we do not have any better results by this than by the old method. You may take all the precautions necessary, by sterilizing the instruments and dressings, and close the wound, perfectly satisfied you have done your duty. Then you turn the eye over to the mercy of the patient. If the patient dreams he is falling over a precipice, as one of my patients did, and suffers prolapsus of the iris, then, although you are not at fault, you will be sure to receive the blame. I will make an exception for cosmetic effect, whenever the operation is made in the young. It will simply make the cataract eye look like the other eye. But 95 per cent. of cases of cataract occur in patients past middle life. Why should you subject your patient and yourself to the chances of having them lose the eye or damage it, for the sake of a round pupil, when the gap in the iris is covered over by the upper eyelid and a strong lens is worn? I have talked to eminent men abroad on the subject, and while some of them hold to it in Europe and also in this country, most have, I think, gone back to the selection of the cases.

For protection of the eye, I formerly tied my patient's hands so they could only bring them to the chest, but the patient is likely to slide down in bed at night and gain access to the eyes. The best protector is a molded pasteboard mask, which is placed over both eyes, and then the patient can have the hands free.

I lost two cases by panophthalmitis in one week, in the Presbyterian Hospital, and when I came to study why, I found both had necrosis of the nasal bones. That explained it all. So I have learned to first examine the nose very carefully in every cataract patient, and

before operating, to treat and if possible cure any catarrh or other trouble there. If I could not cure the case, I should extirpate the tear-sac before I did the extraction, to prevent infection from this source.

DIAGNOSIS AND TREATMENT OF ACUTE PURULENT OTITIS MEDIA.

JOHN A. THOMPSON, M. D., CINCINNATI.

There are several reasons why the diagnosis and treatment of acute purulent otitis media is of interest and importance to every practicing physician. The disease is a very common one. Its spontaneous recovery without loss of tissue and serious impairment of function, is rare. The most important reason, though, is the tendency of the disease to develop as a complication of other serious disorders. In the second week of measles, scarlatina, bronchitis or of pneumonia, or in the third week of typhoid fever, a purulent inflammation of the middle ear is common. Occurring as a primary disorder, this disease is always severe, one which produces grave systemic disturbances and leaves the patient greatly weakened. Occurring as a complication in a patient already exhausted by disease, it may be the factor which determines a fatal result. It generally begins in the upper part of the tympanic cavity, in immediate relation with the porous tegmen tympani, through which transmission to the brain is easy. Post-mortem examinations would undoubtedly show that in many cases of typhoid or of scarlatina, the real cause of death has been an unsuspected purulent inflammation in the middle ear, with an extension to the meninges or to the sinuses of the brain.

Where the attack begins as a primary disorder, the first symptom to attract attention is pain. This will begin as a severe earache, but the pain soon extends to the whole side of the head. Fever begins almost as soon as the pain, the temperature often reaching 102°–103°. Deafness is also an early symptom, but if the attack is unilateral, as it generally is, may not be noticed unless the direct test is made. The deafness is accompanied by more or less tinnitus. In some cases vertigo is very marked. In children, especially badly nourished children, the attack may begin with convulsions. These are apt to be followed by more or less delirium. Direct examination of the ear in the early stages would show intense congestion of the drum membrane above the short process of the malleus and the anterior and posterior folds. Two or three days after the beginning of the attack, this portion of the membrane may be so distended as to overlap the membrana vibrans. By this time a general congestion of the drum may be present. When filled with pus the membrane becomes yellow in color and the epithelium has lost its luster. In some cases necrosed epithelium overlies the membrane, and the dead white appearance of this covering may deceive the observer as to the presence of inflammation in the tympanic cavity until the dead epithelium is brushed away by a cotton-tipped probe. The functional test, if made, will show a lowering of the upper tone limit and an elevation of the lower tone limit. On account of the pain excited, though, the functional tests are rarely made, and are of little value except in cases where the labyrinth is also involved. In these cases the almost total loss of hearing by bone conduction, in addition to the constitutional symptoms, will show the gravity of the disease.

Where the otitis develops as a secondary disorder, in conscious patients, the diagnostic symptoms will be the

same as those already given. In unconscious or delirious patients, the onset of this disease will be marked by increased fever, more active delirium, restlessness and appearance of great suffering. The constitutional condition, too, will show by the marked depression of the patient that some added burden has been laid on the system already weakened by disease.

When the mastoid cells become seriously involved in the purulent processes in either the primary or secondary disease, this extension of the inflammation is attended by increased pain, increased fever and by greater constitutional depression. Locally there will be tenderness and swelling over the mastoid process. Usually, too, there will be some enlargement of the cervical lymphatic glands below the mastoid. Where the process extends, as it so often does, to the cranial cavity, the temperature may reach 104°-105°-106°. There will be intense headache, accompanied frequently by violent delirium. There will be local convulsive movements followed by paralysis of the areas that were formerly involved in the convulsions. The delirium may be followed by stupor deepening into coma, ending in death in a short time. Where the cerebral sinuses become infected, in addition to the local symptoms we have those of pyemia supervening. There will be sudden extreme rises of temperature, followed in a few hours by profuse perspiration and temperature sinking to or below the normal range. This subsidence will be followed in a few hours by a fresh attack of hyperpyrexia.

The preventive treatment of purulent otitis media means treatment of any obstructive disease in the nose or nasopharynx. In adults, this includes treatment of hypertrophic rhinitis, deformed septa, or polypi. In children, the removal of adenoid vegetations or hypertrophied tonsils is the most effective prophylactic meas-

ure. In infective fevers, cleansing of the nose and nasopharynx several times daily with mild alkaline lotions, following this cleansing with a weak spray of menthol and camphor in one of the petroleum oils, is the most efficient preventive treatment. In patients without notable lesions in the nose or nasopharynx, but where exposure to cold lights up an inflammation in the ear, cold sponge-baths daily are most efficient in preventing attacks.

In unconscious or delirious patients, in diseases where suppuration in the middle ear is common, daily inspection of the ears should be made in order that the first symptoms of otitis should be seen and abortive treatment be begun at once. If seen sufficiently early, suppuration can be prevented in many cases. Opiates to relieve the pain should be freely given. The local abstraction of blood from in front of the tragus is an old and efficient remedy. These measures, together with the use of dry heat, will give relief and abort many cases. With our modern knowledge of asepsis, I do not think that it is advisable or necessary to abstract the blood by such an indirect route as either the natural or artificial leech in front of the tragus. With the external meatus carefully cleansed, and with sterilized instruments, the local depletion can be accomplished and much better results obtained by making direct incision into the congested folds of membrane in the upper part of the tympanic cavity. This should be done in all cases as soon as the degree of pain and fever, and the intense congestion above the short process of the malleus, show that you are dealing with an infective process, one which will result in purulent otitis if left to run its natural course. The incision should be made in the upper posterior quadrant, and should be carried deeply into the tympanic cavity, so as to incise the folds of membrane present in this region. The bleeding

should be encouraged by gently syringing with warm sterilized water. A powder of boracic acid may next be blown into the ear gently to maintain asepsis, and dry heat be applied. This course will, in the majority of cases, prevent suppuration. The wound in the drum will heal in two or three days, and there will be little impairment of functional power.

C. W. O., physician, aged 37 years, was seen by me in October, 1895, after considerable exposure at night in attendance on obstetric cases. There was intense pain in the right ear. He had been treating it by hot douches and codeine internally. Temperature 101°. Examination showed intense congestion of Shrapnell's membrane. Dry heat locally and morphine internally were suggested for treatment that night. The next morning he reported that he had only slept a short time after two hypodermic injections, ¼ gr. morphine each. Pain still intense, temperature 102°. Free paracentesis was made and the bleeding encouraged by warm douches. Following this a little boracic acid was blown into the ear. The pain and fever both subsided rapidly, and the patient resumed work that afternoon. No pus was seen in the ear at any time, and convalescence was complete in four days.

Where suppuration has begun before the case is recognized, or where abortive measures have failed, the pus should be liberated from the tympanic cavity by the free incision of the drum. This incision should be carried through the posterior half of the drum membrane from near the tympanic ring below to the upper posterior portion of Shrapnell's membrane. In this way free drainage of the pus, which has usually burrowed down along the handle of the malleus until it has reached the atrium, will be accomplished. After the pus and blood which has escaped into the external meatus has been carefully mopped out with sterilized cotton, the meatus

should be lightly packed with iodoform gauze. This gauze may be allowed to remain for twenty-four hours, when it should be changed by the physician and not by the patient. Usually the pain and fever and all the graver symptoms will subside within two or three hours after the establishment of free drainage. The presence of the gauze in the external meatus does not prevent the escape of pus, but it does prevent reinfection of the tympanic cavity. Chronic suppuration does not arise from one infection, but from repeated infections. By the line of treatment here indicated we can usually secure a cure of the acute suppuration in a comparatively short time, and prevent a chronic suppurative process following the acute. We have no known means of disinfecting living tissues. Any agent which will destroy the germs of suppuration is even more destructive to the white blood-cells, nature's agents for the limitation and cure of the suppurative process. The long line of douches and powders that have been used with a fair degree of success in the treatment of acute purulent otitis are objectionable in that their continued use by either physician or patient is liable to result in a reinfection. Packing with antiseptic gauze, with aseptic precautions, overcomes this objection and aids in the most efficient way the natural processes of cure.

M. R., aged 20, referred to me Feb. 24, 1896, by Dr. L. S. Colter. The attack began five days previously with pain in the ear so intense the patient had not slept for three days. He had been treated by dry heat locally and opiates internally. On the fourth day his physician opened a small furuncle in the external meatus. At this time his temperature was 102° and there was marked tenderness over the mastoid. The case was sent to me the next morning. There was great bulging of the membrana flaccida, which was yellow in color. There was induration of the soft parts imme-

diately below the mastoid. The drum was freely incised, and the blood and pus washed out with warm sterile water. The external meatus was then packed with iodoform gauze. The patient was relieved entirely from the pain within three hours, and slept most of the time the next fifteen hours. The fever had disappeared when he returned to my office the next day. The discharge of pus was very free for the next five days. The treatment was daily packing with iodoform gauze until he was able to resume his work. After that he was given peroxide of hydrogen with which to cleanse the ear twice daily. Convalescence was complete in ten days.

Where, in the ordinary case, symptoms of mastoid involvement become evident, it is not advisable to continue opiates for the relief of pain. They mask the symptoms and prevent our gaining precise information as to the extent of the trouble. We should depend rather on ice applications over the mastoid process and on free drainage through the tympanic cavity. In addition to these measures, if the symptoms of mastoiditis are well marked, local depletion can be best obtained by free incision along the posterior wall of the external bony meatus. The communication of the veins of this region and of the mastoid cells is much more intimate than between those of the mastoid and the integument, and we can get a greater result from the local depletion in this region than from the classical Wilde's incision. Should these measures fail to prevent the extension of the process in the mastoid cells, nothing should delay the operation of opening the antrum and establishing free drainage through that cavity and through the tympanum and external meatus.

Where symptoms of suppuration in the cranial cavity become marked, if the patient's life is to be preserved operation must not be delayed. Where the operation is

made sufficiently early, the abscess may be found between the tegmen tympani and the dura mater. If the mastoid is at the same time involved, an extension of the ordinary bony incision upward will liberate the pus in the subdural abscess and usually result in a rapid recovery. Later in the case, where the temporosphenoidal convolution or the cerebellum is involved, an extension of the incision upward or backward, or better still, trephining over the affected area, must be the measure employed. The only chance of recovery in these cases is the opening and thorough drainage of the abscess. Where infection, with thrombosis of the lateral sinus, has occurred, the internal jugular vein must be ligated, the sinus incised and thoroughly cleansed and packed with gauze. The details of the operative treatment required in purulent otitis media and its complications, would make this paper far exceed the limit set by the rules of the Society. All that can be done is to briefly, and somewhat dogmatically, state the application of the principles of general surgery to suppurations in the middle ear.

STRYCHNINE AND NITROGLYCERINE IN THE TREATMENT OF PNEUMONIA.

FRANK W. THOMAS, M. D., MARION.

Primary lobar or croupous pneumonia, which was formerly regarded as simply an inflamed lung, is now considered a general disease, of which the inflamed lung is a characteristic lesion. The inflammation may involve the whole of one lobe, or the whole of one lung, or portions of both. No age, race or climate is exempt from this disease, which is found abundantly everywhere. Some cases run a rapid course without any serious complication, while others so overwhelm the patient that death soon claims the victim.

Loomis says that "nine-tenths of the deaths from acute diseases after the age of sixty-five are from pneumonia." He also says that there is no relationship between the amount of lung tissue involved and the intensity of the symptoms. "High fever, delirium or convulsions, and rapid heart-failure, are often as well marked when a post-mortem reveals only one lobe to be involved, as when a double pneumonia exists." The mortality is great, and when we glance over the records for the past half century, we find that medical science, with all its great discoveries, has failed to lower the rate of mortality in that time, or influence the duration or convalescence of the disease.

The distinguished Loomis himself, whose useful life was so suddenly terminated by this very disease, tells in one of his works that he lost 87 cases out of 255 in his own practice. Wilson Fox says that according to reports of English physicians, pneumonia complicated by endocarditis is fatal in 75 per cent. of the cases; by pericarditis in 54 per cent.; and by Bright's disease in 50 per cent.

What then is the cause of this great mortality? Various causes may be assigned in particular cases, but the facts seem to warrant the conclusion that in the vast majority of cases the fatal blow is struck at the heart and nervous system. If this be true, is it not wise and proper to give special attention to these two functions in the treatment of this disease? It is quite generally conceded that the liability of the failure of the heart's action, either gradual or sudden, constitutes one of the greatest dangers of pneumonia. *Why* this is so, has not been fully established, but it resembles in many respects the failure of that organ in diphtheria, probably produced by the poisonous effects of the bacteria of the disease. In pneumonia, the stagnation of the blood, combined with the pressure exerted by the rapidly forming exudate, narrows the vessels, and prevents expansive movements of the lungs. Pulmonary circulation is obstructed, the right side of the heart is distended at first, and finally exhausted in its efforts to propel the blood, which, owing to the deficient respirations, is loaded with an excess of carbonic acid. The liability to cardiac failure usually begins about the third day of pneumonia, and is the greatest on the day before defervescence. The danger lies in the second stage, that of red hepatization, and here is where heart-tonics should be introduced. It is particularly necessary in those persons who have had endocarditis or pericarditis; or in those whose nervous system is in any way

impaired, either from disease or overwork. The fact that the heart and lungs have a common nerve-supply is sufficient reason why the functions of both should be disturbed if their common innervation is impaired. Pneumonia is no doubt so fatal among the aged, even with low fever, because there is not enough nerve-stamina to arouse the required antagonism to the disease.

Prof. Mays, of the Philadelphia Polyclinic, argues in the last volume of International Clinics that the nervous system is primarily at fault in all ordinary cases of acute pneumonia, and that the intensity of each attack is inversely related to the degree of resistance of the nervous system. Several prominent English physicians have expressed themselves to the effect that they regarded acute pneumonia as a form of herpes zoster of the pneumogastric nerves.

Since the heart-action and nervous system are so impaired in this disease, how can we best support them when the life of the patient is seriously threatened? While recognizing the value of several remedies under certain circumstances, I believe with many others at the present day that we have in strychnine and nitroglycerine two of our most valuable remedies with which to meet this condition. The belief has grown very strong in the last few years that these two drugs are heart-tonics of extraordinary character, in time of great strain, shock or collapse, either from injury or disease.

One of the best authorities, Prof. Hare, says that "strychnine increases the force of the pulse-beat and pulse-rate by a stimulation of the heart-muscle and its ganglia, while the rise of arterial pressure which it causes is due to stimulation of the vasomotor center, and is therefore one of the most constant and powerful stimulants to the respiratory center that we have, and it not only increases the rate but the respiratory capacity."

This is the very help that is needed in the treatment of pneumonia.

H. C. Wood says that "nitroglycerine is the most powerful of the nitrites"; and he agrees with Lauder Brunton and others that its action is almost universally regarded as a very efficient remedy in stimulating the heart-action and the nerve-centers when there is any tendency to cardiac failure.

Even when digitalis is given with a view of improving the tone of the cardiac muscle in pneumonia, strychnine is generally used as a supplement to that drug, because of its powerful stimulating effect upon the respiratory center, and also as an aid in preventing general nervous depression. In order to get the best result, the dose should be large enough to have a decided effect upon the patient. From the fortieth to the twentieth of a grain of strychnine, or even more, may be given every two or four hours according to the necessity of the case. And nitroglycerine may be given from the two-hundredth to the fiftieth of a grain from one to four hours as indicated. Since the heart and nervous system are so soon overtaxed in pneumonia, there should be no delay in the administration of these remedies. Begin early, if the case is at all severe, for trouble will surely come that calls for help.

The following case, briefly described, is in point: I was called on the 1st day of last April to see a laboring man, thirty-five years of age, who was suffering intensely with all the characteristic symptoms of croupous pneumonia. The temperature was 103.5°, pulse 120 and respiration rapid, reaching on the fifth day 75 per minute, and continuing at that rate for forty-eight hours, although the temperature went down two degrees and the pulse fell to 110. The cough was violent, rusty sputa well marked, the face flushed and cyanotic, while delirium set in, and the anxious, distressed look

indicated approaching death. At the beginning of these symptoms he was at once given the one-twentieth of a grain of strychnine sulphate at one hour, and the one-hundredth of a grain of nitroglycerine the next hour. This dosage was kept up without intermission for forty-eight hours, at the end of which time the respirations fell to 50 per minute, and breathing became more easy. An occasional dose of whisky and digitalis was also given, but not in large quantities. The intervals for giving the heart-stimulants were then lengthened, as indicated, but the strychnine was kept up from four to six hours, until the man was out of danger, three weeks from the beginning of the attack. The case was a most desperate one throughout, but the patient finally made a good recovery; and I fully believe that the strychnine and nitroglycerine should be given great credit for the results obtained.

A recent issue of the Archives of Pediatrics contains reports from several large hospitals on the treatment of pneumonia. Prof. L. Emmet Holt, speaking for the Babies' Hospital of New York, says that "strychnine is about the only heart-stimulant used. The one three-hundredth of a grain is given to a child one year old every four hours." At the Children's Hospital, Philadelphia, Prof. Griffeth, of the University of Pennsylvania, says "strychnine is very frequently used in large doses as a respiratory and cardiac stimulant." Prof. Northrup, of Bellevue College, reporting from the New York Foundling Hospital, says "tonics and heart stimulants are employed. Strychnia sulphate is given in doses of one-hundredth to one-sixtieth of a grain every four to three hours as indicated. In severe cases, with weak heart, this is given up to the point of increasing deep reflexes. . . . Nitroglycerine is used in doses of one four-hundredth to one-hundredth of a grain every four to two hours, if there is a tendency

to duskiness of the lips, nose, and ears." This plan, he says, has the approval of experience both in adult and children's service. Prof. Adams, speaking for the Children's Hospital at Washington, D. C., says "the value of hypodermic injections of strychnia, nitroglycerine and ether in the treatment of hypostatic pneumonia justifies their administration to the fullest degree of toleration," and adds, "that the marvelous effect of nitroglycerine in young children almost moribund has often been noted."

In conclusion, gentlemen, I wish to say that it is my belief, that if more strychnine and nitroglycerine were used, used freely but judiciously, in the treatment of severe cases of pneumonia, the statistical tables in the next few years would show a much less rate of mortality than is presented in the text-books of to-day.

DISCUSSION.

DR. C. R. REED:

I arise simply to endorse the treatment of those cases of pneumonia attended with great debility, great difficulty of respiration, and expectoration, particularly with the strychnine. I have used the nitroglycerine but little if any, but I have used strychnine with the happiest effect. I have no doubt the good result was due largely to the large doses employed. Now, don't stand aghast when I tell you I gave one-eighth grain doses. I have taken the one-sixteenth grain myself, and the one-twelfth grain often. From the one-eighth grain you will obtain no bad effect when the patient is lying down and very ill. No one can take such doses and walk around.

DR. KLINE:

I rise to endorse the paper, and especially the remarks of the preceding speaker regarding the dosage. I think we fail sometimes by not pushing our remedies far enough and thereby producing the physiological effects. I know one case in which we pushed the strychnia

up to the point of tolerance, and another young woman is walking the streets to-day because the strychnia was pushed to the degree of tolerance. One point regarding nitroglycerine is its relaxation of the capillary system, thereby relieving the overworked heart and arterial tension.

DR. HOFF:

I have nothing to say against the paper; it was a very good paper. But we have Norwood's tincture of veratrum viride, which I consider nearly a specific in all cases of pneumonia. I believe pneumonia in all its forms can be cut short by Norwood's tincture of veratrum viride. I have used it since 1852. I have his letter of 1852, and all that he claimed for it has been verified in my practice and much more. He claimed it was a specific for pneumonia. My belief is that it is as near a specific for pneumonia as any therapeutical agent can be, and I wonder that the profession does not use the veratrum more generally, as there is no other remedy so effectual in the whole materia medica for the relief of all forms of pneumonia. It makes your patients very sick, but this does not matter, for stimulants will bring them out of it. You must keep up the treatment continuously until the fever is broken and patient convalescent. You can keep the pulse at 40 or 50, or anywhere you want it. I say this from my own experience. The doctor says he can cure the patient in three weeks; I think you can cut the disease short in one week with Norwood's tincture, and often in the first stage in less time. This remedy and whisky stimulation will carry the patient through the most violent attack safely.

DR. MOREHOUSE:

In this new application of an old drug as a remedy, we desire to know something. An old practitioner has told us one-eighth grain doses can be used. Now, I have had toxic symptoms result from such a large dose repeated often, and the toxic point is a dangerous point. I have produced dysphagia from the use of this drug, and since then I am a little more careful in its use. And, what is the point of tolerance? What is the

warning signal by which we are to be governed in the use of this potent drug? I think constriction of the fauces and dysphagia, might possibly be one. Here we are, putting the drug into our submissive patient. What is the point of tolerance? Shall we continue to the point of convulsions? What is the danger signal?

DR. THOMAS:

In reference to the point made by the last speaker, with regard to the danger of giving strychnine in very large doses, that point of course is to be watched the same as in the use of any other powerful drug. An excessive dose is to be avoided, but enough should be given to get the desired result in each individual case.

As to veratrum viride, mentioned by one speaker, that drug hardly had consideration in this paper, because it deals with pneumonia in the second stage. We all know that veratrum viride is valuable in many cases in the first stage of the disease. Every man who has treated many cases of pneumonia, knows that there is great danger of suddenly finding his patient dying because of the overtaxed heart. It is for this reason that I wish to emphasize the point that we should be on our guard, and at the first indication of heart-failure use cardiac stimulants at once. In this way many lives might be saved that would otherwise be lost.

THE TROPHIC DISTURBANCES OF ASTIGMATISM.

J. E. Brown, M. D., Columbus.

It is not with the expectation of stating any new truths that this paper is presented to the Society, but rather that attention may be called to some facts already demonstrated and accepted, and in such relation that a better idea may be had of their importance to all practitioners of medicine. The paper is based upon observations made in cases of monocular inflammations, excluding accidental or traumatic, to ascertain, if possible, whether there was any relation between the eye inflamed and the degree of astigmatism, where astigmatism was present. These observations have convinced the writer that there is such a relation, and a few deductions are made that are in thorough accord with physiological teaching. While probably these have been reached by many other workers in ophthalmology, our standard literature has not emphasized them to any extent.

In neurological works the definition of trophoneurosis is narrowed and the term applied to but a few diseases. It is, however, stated that "at present we can form no idea how many diseases not only of the nerves and of the muscles but also of other organs we shall have to call 'trophic' when we have once become better acquainted with the position of the trophic centers and fibers than we are now." Also, that "to bring about alterations in

the trophic influences it is not necessary to have disease of the ganglionic cells or cell groups which probably act as centers, but that pathological processes in the peripheral nerves may also have the same effect," and the accepted definition of a trophoneurosis concedes that any impairment or derangement of nervous function can lead to trophic changes.

It has long been recognized that various nutritive changes or inflammatory conditions are found accompanying errors of refraction. From a study of the etiology of these reactions, it would seem that astigmatism would naturally be a greater factor than either uncomplicated hyperopia or myopia.

For the performance of its function, the eye is so fitted that in an otherwise healthy person it can be called upon for a reasonable amount of work without fatigue or disturbance. The question as to what is the exact focal status of a normal eye is yet to be settled. It must be granted that it is a point that hinges somewhat upon race and occupation. The savage, whose eye should be and is adapted for keen distant vision—who earns his living with visual axes parallel and a focal point far beyond fifteen inches—by nature has eyes that would have to undergo a certain evolution to fit them for more or less constant convergence and maintaining a focal point at fifteen inches or less—a condition under which many of our patients must earn their living. What would give normal vision to the one, might mean intolerable asthenopia to the other. Granted, then, that we have an otherwise healthy person, it is because the eyes are defective in their focal strength or muscular balance that their use is attended with difficulty or disturbance. Taking emmetropia as normal, we recognize departures from this standard under the heads of hyperopia, myopia and astigmatism, an irregularity in refraction which may be associated with

either (or both) of the two first named. These conditions collectively we speak of as constituting ametropia. The symptoms to which this faulty mechanism gives rise on use of the eyes constitute asthenopia, and the description of these as given by modern writers has been so uniform and has become so well known that it can be called classic. This, however, is a description of merely functional disturbances. There are evidences of eye-strain other than those spoken of. These consist in vasomotor changes, hyperemia, and the alterations in nutrition which lead to inflammation, and it is with the exhibition of these that we are now concerned. These inflammatory changes are usually of the milder forms of conjunctival irritation and inflammation. Blepharitis, phlyctenular conjunctivitis, and keratitis, lachrymation, increase or change in secretion of the Meibomian glands, styes and the like are mentioned as at times being found in errors of refraction.

Fuchs says that "excessive straining of the eyes, especially in hypermetropic or astigmatic persons, can result in chronic catarrhal conjunctivitis"; Oliver, that "in other cases, the patient, especially if young, will complain of irritation and even inflammation of the external appendages of the eye. He will state that he is 'subject to styes,' that 'the edges of the lid become red and sore,' and that 'the eye feels hot, dry and uncomfortable.'"

So, also, in paragraphs upon phlyctenular inflammation, errors of refraction are mentioned as a possible cause, but for the greater part they are not given in the classical list of either exciting or predisposing causes of inflammatory disturbances of the anterior segment of the eye, and their connection with any but the choroiditis of myopia in the posterior segment is never mentioned.

But since inflammatory reactions in ametropia are an acknowledged fact, let us study the manner in which they arise.

For vision the eye seeks clear retinal images, and in ordinary binocular vision these images fall upon homologous areas of the retina in the two eyes. With normal innervation this is the end sought and the end obtained. An emmetropic eye is at rest in distant vision and makes only a normal effort for near work. There is consequently no fatigue, no nervous or inflammatory reaction in the reasonable use of the organ.

In hyperopia clear distant vision is no longer possible with the eye in a condition of rest. To obtain this the ciliary muscle is innervated and called into action, when unless the hyperopia is excessive vision is brought up to normal by the physiological contraction of this muscle.

This contraction is made in the same way as in the emmetropic eye, and unless there is thrown upon the muscle the added work of focusing for the near point, it is often able to carry the extra burden without apparent disturbance. Here the physiological contraction of the muscle gives the end sought, *i. e.*, a clear retinal image, and while *overworked* it is still a *normally working* eye.

In myopia we have clear retinal images inside of the far point. Beyond it they are blurred, and there is no mechanism the stimulation of which will improve the condition. Recognizing this fact, the accommodative mechanism in true myopia is freed from work, save that amount which may be associated with the excessive convergence necessary to direct the visual axes to that point required by the focal index of the organ. Here then we have accomplished clear vision and have called into play muscles fitted for these purposes. They have been overstimulated and overworked, and this means vasomotor and nutritive changes because of changed in-

nervation. They have, however, accomplished their function.

We believe that it is an accepted proposition in physiology, that within certain limits increased stimulation of an organ, with accomplishment of function, leads to increased nutrition, and it is only when this overstimulation is excessive or long continued that there are other trophic disturbances ; but when we have stimulation without accomplishment of function there is instituted a condition in which trophic or nutritive changes are much more likely to result.

Now we know that clear retinal images are a necessary part of vision, the function of the eye, and an end toward which the organ constantly endeavors, while in astigmatism we have a condition in which such clear images are unobtainable in a physiological way. No normal contraction of the ciliary muscle brings into clear focus on the retina the rays unequally refracted from the reverse meridians of the cornea or lens. Professor Buller, of McGill University, speaking of asthenopia from astigmatism, mentions the "element of imperfect retinal images which nature abhors not less than she does a vacuum, but which the unassisted eye is wholly unable to correct." Here then we have a condition which is an unsurmountable obstacle to the accomplishment of the ends for which the accommodative mechanism is fitted. But the blurred image is there and acts as a constant stimulus to the ciliary muscle, which by contraction of the various degrees and finally by irregular spastic contraction, a function for which it is not normally fitted, endeavors to correct the fault. It is a story of constant stimulation without securing the end sought. This is that which physiology teaches leads to vasomotor and trophic change. In our present state of knowledge we cannot completely differentiate these two sets of nerves or know how much nutritive

change depends upon vasomotor change, but as stated by Hirt it seems probable that we shall later find that many things now considered due to vasomotor are due to trophic influence. Be that as it may, we have in astigmatism, much more than in hyperopia or myopia, a condition associated with vasomotor disturbance and peripheral nerve irritation.

Nowhere has there been better evidence of the existence of trophic nerve-fibers than in the trigeminus. Neuroparalytic keratitis is taken as a type of trophic change. Now peripheral irritation of the fibers supplying the eye through these disturbed functions cannot do otherwise than lead to nutritive changes, and diminish the resisting power of the tissues thus affected. Neurologists will tell you that in the broader brain pathology "it is worry and not work that kills," and it is the worry of unsuccessful stimulation that is liable to lead to nutritive change.

The anterior portion of the eye is constantly exposed to temperature changes, to impact of foreign bodies, chemical substances, and with the conjunctival sac, to contact with various bacteria and disease-producing germs. Gallenga found bacilli and cocci (staphylococcus aureus and albus) in the secretion in conjunctival catarrh and even in the mucus which gathers during the night at the inner canthus in the healthy state of the conjunctiva. Certain cocci are found always present in blepharitis, conjunctival catarrh and phlyctenular inflammation. Trachoma is supposed to carry its specific cause. The assault of the gonococcus is so violent that probably no conjunctiva withstands its introduction without marked reaction, but with the other less virulent bacteria which are found present practically all the time, it is only when they find tissue resistance diminished that they overcome it and give rise to inflammation. Such vasomotor and trophic disturbance as

has been shown to accompany astigmatism must to a certain extent diminish the resistance of the eye tissues to this assault. A depreciated condition of the general health from any cause, acute or chronic, will diminish this resistance, as will also anything locally giving rise to congestion, lachrymation, etc., but behind all this there is an increased vulnerability when the nervous control of these tissues is deranged.

Not every ametropic or astigmatic eye becomes inflamed. Only a very small per cent. of them do so, but if in such eyes when they become inflamed we find a constant relation between the eye alone or most seriously affected and the eye showing the greater astigmatism, it would be strong evidence that this error was a predisposing cause; it being the factor that when lowered vitality, overwork, the slight traumatism of dust particles which reach the eye, the presence of bacteria, or even vasomotor change alone, were present, determines which one is to be affected.

It has been impossible for the writer to estimate the astigmatic or total refractive error in anything like a large proportion of the cases in which persons suffering from a monocular inflammation have applied for relief, for reasons that are apparent to any ophthalmologist. He is not able therefore to bring such a large array of figures as others of longer and wider experience might produce from similar observations, but it is believed that these same numbers in the personal experience of others would convince them, as they have him, that there is such a relation between the astigmatic and the inflamed eye.

These notes refer to 129 cases in which an astigmatic error was present and the refraction ascertained. The list, as a whole, shows that in 83 per cent. the eye with the most marked lesions was the most astigmatic. Taking them in classes, there were fourteen cases of

trachoma, twelve (86 per cent.) of which followed the rule; twenty-seven of follicular, non-trachomatous inflammation, twenty-four (89 per cent.) of which with the rule; fifty-seven of miscellaneous catarrhal inflammation of the conjunctiva, including also the appendages, forty-five (80 per cent.) with the rule; nineteen cases of phlyctenular or severe recurrent ulcerative keratitis, seventeen (90 per cent.) with the rule; and twelve cases of iritis or irido-choroiditis, eight (66 per cent.) with the rule.

It would seem that the evidence in conjunctival and corneal disorders is conclusive. In iritis and choroiditis the writer could not claim to base conclusions on a table that included but twelve cases, eight of which, however, follow the rule set forth in this discussion. Cases of lenticular cataract have not been included, because the cases recorded under this test are too few to constitute proof, but their evidence is in line with work reported by Roure, who tabulated thirty-three cases in which the eyes were unequally astigmatic, the one first affected in 80 per cent. of the cases being the more astigmatic, and who concluded that "we are not justified in regarding astigmatism as a cause of cataract but as a condition favoring the morbid process, when, for reasons that we do not yet know, the crystalline lens becomes opaque."

In regard to pterygium, which we have here classed with conjunctival disorders, and every case of which followed the rule, it is known that the growth is a cause of change in the curvature of the cornea. We have seen cases in which it would seem that it was too early or the growth too small for it to have been the cause of this change and in which there was a history of defective vision in the one eye for a long time prior to the appearance of the pterygium. In the conjunctival irritation or sclero-corneal lesion which forms the beginning of this growth, the trophic disturbance of astigmatism is undoubtedly a factor.

A METHOD OF PREVENTING THIRST AFTER CELIOTOMY, WITH A STUDY OF THE URINE.

WM. H. HUMISTON, M. D., CLEVELAND,

Associate Professor of Gynecology in the Medical Department of Western Reserve University; Gynecologist to St. Vincent's Charity Hospital; Consulting Gynecologist to City Hospital, etc

---

In the Transactions of the Section in Gynecology, College of Physicians of Philadelphia, as published in the February, 1896, number of the *American Journal of Obstetrics*, occurs an interesting discussion by well-known surgeons of that city in regard to the quantity of urine passed after abdominal section.

Dr. Baldy said: "I have noticed *for years* that the patient will pass after abdominal section, as little as six ounces in twenty-four hours, very frequently eight to ten, where they passed thirty to forty before."

Dr. Noble is quoted thus: "About two years ago I tabulated every case. My experience is that twenty ounces in the first twenty-four hours after abdominal section *is a large* quantity."

Dr. Howard Kelly, in discussing this subject before the American Gynecological Society, said after continuous observations for the last three years of the urine following celiotomy, he had found that it required a period of ten days in the average case for the quantity

of urine to regain its normal, beginning with a diminution of from one-third to one-half on the first day, and gradually increasing.

The method of preventing thirst following celiotomy that I first published in July, 1895, in the *American Journal of Obstetrics*, has continued to give the same uniform results that the twelve cases which were then reported gave promise.

For the past two years the following has been my method—*adopted* because it was so efficient in overcoming the intense and distressing thirst which follows celiotomy, and *continued* because the thirst *is allayed* and the quantity of urine almost quadruply increased, together with a remarkable increase in the total amount of urinary solids excreted.

The method: "The patient should have the usual preparation for celiotomy; *i. e.*, diet, daily baths, cathartics, etc. For three days prior to operation, order the patient to drink one pint of hot water an hour before each meal and on retiring, thus drinking two quarts of water each twenty-four hours, the last pint to be taken three hours before the time set for operating. Do not omit to give the water the day previous to the operation, while the patient is restricted to a limited amount of liquid nourishment, and the bowels are being unloaded. We thus restore to the system the large loss of fluid occasioned by the free catharsis, and we have the great satisfaction of seeing our patient pass through the trying ordeal of the first thirty-six hours after the operation in comparative comfort, with no thirst, a moist tongue, and an active renal function, represented by an excretion of from twenty-eight to fifty fluid ounces of urine during the first twenty-four hours, catheterization being seldom necessary."

The convalescence has been rapid and entirely free from the restlessness that is produced by the dry tongue

and extreme thirst in those cases where this method has not been used. The pulse has been full, regular, and strong, which is in keeping with the active renal function noted. In septic cases that come for operation, the weak heart-action, and the diminished renal secretion are prominent symptoms, and if a crisis is not imminent, I delay operation for a few days, giving time for the hot-water method to be used. Within a short time I have had twenty-four consecutive celiotomies with one death, from heart-clot, occurring in thin and dilatable walls. I refer to these cases merely to demonstrate the severe test that I have given this hot-water method.

I beg leave to briefly report the results obtained in two cases :

Mrs. D.—Diagnosis : Ruptured ectopic pregnancy, with general peritonitis and sepsis. For eighteen hours previous to entrance to my hospital, patient passed but six ounces of urine. Was admitted September 23, 1896, at 7:30 P. M. Preparation of patient immediately began and continued through the night. Patient passed four ounces during the night, this containing 50 per cent. albumen, compound granular casts, degenerated kidney epithelium, and general debris. Chloroform was administered for one hour and fifteen minutes, heart-stimulants were freely given during this time. The operation was extremely difficult, as old dense adhesions, together with the more recent ones, were encountered. There was also a large intraligamentary cyst of opposite side which was enucleated. Two quarts of normal physiologic salt solution were injected into the colon while the patient was still in the Trendelenberg position. Patient left the table in an extremely low condition. However, in the first twenty-four hours the patient passed twenty-eight ounces of urine, with 770 grains of total solids—the albumen being very much diminished; in the second twenty-four hours twenty-four ounces of

urine with 607 grains solids, with only a faint trace of albumen. On the seventh day forty-eight ounces and 528 grains solids, with still a trace of albumen, but no casts found after four hours of sedimentation. That is, this patient was operated upon under most unfavorable conditions, with suppression of urine, general toxemia, and without even ordinary preparation for an operation; and yet, by the administration of large quantities of water by stomach and bowel during the twelve hours preceding the operation, and by the addition of two quarts of salt solution while on the table, the kidneys are made to excrete an average of twenty-six ounces of urine, with 689 grains of total solids, during the first two days, and the patient's life is saved.

Mrs. G.—Diagnosis: A large and rapidly growing ovarian cyst, general sepsis, acute septic parenchymatous nephritis. Three weeks prior to admission to my hospital I opened through the vagina a large pyosalpinx, preparatory to the removal later of the then large ovarian cyst by celiotomy. The patient's general condition failed to improve, however, and there were evidences of absorption of septic matter still continuing; and further, the ovarian cyst increased in size very rapidly. For ten days previous to admission, the kidneys were excreting daily from eight to fifteen ounces of urine, with a low specific gravity, in spite of the rather vigorous measures adopted for increasing the amount. During the week allowed for preparation of the patient, under the administration of strychnia and potassium bitartrate, and copious and frequent draughts of hot water, the kidneys more than doubled the largest quantity passed in the period of ten days prior to admittance, together with the quantity of total solids.

Upon opening the belly the adhesions were found to be general and very dense, the bleeding too was quite free. The wall of the cyst was stitched to the abdom-

inal parietes in the lower angle of the incision, and the cyst contents of 110 ounces of thick pus (pea soup) was evacuated by trocar and canula. The cyst cavity was carefully flushed and packed with iodoform gauze. This patient passed during the first two days succeeding the operation an average of sixteen ounces, with 387 grains of total solids. On the fifth day fifty ounces were voided, with 605 grains of solids. The patient made an uneventful and rapid recovery, but the kidneys had not fully regained their tone in the four weeks she remained in my hospital.

These two cases, together with the average of the last twenty-four cases, in which more careful and full tabulations have been kept, are sufficient to show the value of my water method.

The estimation of the total solids is, according to Haines' Modification of Heuser's Method, multiplying the quantity in ounces of urine passed in twenty-four hours by the last two figures of the specific gravity, and the result by co-efficient 1.1. The table of total solids for the normal case according to body weight is by Etheridge.

The average of total urinary solids voided during the first twenty-four hours succeeding admission to "The Home" was 477 grains, the average total quantity of urine was 29 ounces. During the day preceding the operation 30 ounces of urine containing 491 grains of total solids were excreted.

The average quantity of urine voided during the first twenty-four hours following the operation was 31½ ounces, an average total solids was 972 grains; in the second twenty-four hours 25 ounces of urine, containing 680 grains of total solids, were passed.

The average total quantity of urine voided during the first twenty-four hours following admission to the hos-

pital is above that of the ordinary gynecologic case, I believe.

Upon the first consultation I always advise the use of *at least* an ordinary amount of water, together with the administration of the usual diuretics, especially the potash and soda salts, with occasionally digitalis.

This accounts in all but two cases of the twenty-four for the large amount excreted.

I wish particularly to call your attention to the enormous increase in the amount of the total solids eliminated during the first twenty-four hours after the operation, over that of the preceding twenty-four hours —from 491 grains to 871 grains, *showing a gain of almost 80 per cent.*

Just a few days ago I succeeded in securing the twenty-fours' urine from six healthy females, which I had examined with the following results. Their average weight being 115 pounds, the normal total solids (according to Etheridge) should be 945 grains. The average quantity of urine passed was 37 ounces, containing an average of total solids amounting to 677 grains.

The comparison of the results between the operative cases and healthy subjects is interesting—showing how nearly my patients approach at least the normal quantity, and how they so far surpass the elimination of total solids immediately following abdominal section.

There is one point to which I wish to call attention, if you will permit me to digress.

The value of lavage in persistent vomiting after celiotomy. The results were so striking and immediate, in two desperate cases, after failure to control vomiting by every known method, that it will be used much earlier hereafter.

I shall adopt and advise washing of the stomach thoroughly an hour *preceding* operation in such cases

that have been troubled with gastric irritability for a length of time.

I cannot refrain from mentioning this, hoping that in the discussion some one who has had a wider experience than I, may give us the benefit of it.

Upon entrance.		24 hours preceding operation.			Name.	Weight of patient.	Normal quantity of total solids which each patient should pass according to her weight.	Quantity of urine passed during first 24 hours.	Total solids passed during first 24 hours after celiotomy.	Quantity of urine passed second 24 hours.	Total solids passed during second 24 hours.	Average quantity of urine passed during first 2 days.	Average quantity of total solids passed during first 2 days after celiotomy.
oz.	gr	oz.	gr.			lbs.	grs.	oz	grs.	oz.	gr.	oz.	gr.
...	...	...	...	1	Mrs. C. ..	85	752	25	633	23	607	24	620
...	...	...	...	2	Mrs. K. ..	100	854	35	1001	17	561	26	781
...	...	...	...	3	Mrs M. ..	140	1078	53	1283	32	915	42½	1099
...	...	...	...	4	Mrs. F. ..	90	789	23	683	18	574	20½	628
..	...	...	...	5	Mrs D. ..	154	1150	28	770	24	607	26	689
...	...	...	...	6	Mrs. M. ..	120	974	32	915	26	858	29	887
48	422	18	337	7	Mrs. H. ..	105	854	33	944	26	744	29½	844
20	396	32	598	8	Mrs. K. ..	140	1078	28	862	26	858	28	862
34	493	35	501	9	Mrs. S. ..	110	916	34½	1025	24	845	29	935
36	752	39	686	10	Mrs. R. ..	120	974	31½	623	29	638	30	630
...	...	30	462	11	Mrs. W. ..	100	854	25	605	23	531	24	568
...	...	42	482	12	Mrs. S. ..	165	1217	25	880	35	770	30	825
15	281	24	475	13	Mrs. G. ..	135	1053	16½	399	15	375	16	377
32	460	39	472	14	Mrs. B. ..	105	885	37	895	40	880	38½	888
38	460	39	472	15	Mrs. C. ..	100	854	32	880	40	704	36	792
...	...	26	429	16	Mrs. B. ..	140	1078	48	950	28	616	38	783
32	634	56	952	17	Mrs. C. ..	120	974	28½	846	18	559	23½	702
14½	478	24	686	18	Mrs. W. ..	130	1028	34	1074	19	564	21½	819
25	605	20	550	19	Mrs. B. ..	120	974	33	944	20	616	21½	780
26	484	15	479	20	Mrs. G. ..	150	1150	32	1056	25	743	28½	900
38	290	38	290	21	Mrs. H. ..	95	821	33½	847	20	528	27	685
11	350	24	581	22	Mrs. L. ..	110	916	29½	974	22	678	26	826
48	686	30	660	23	Mrs. L. ..	160	1198	32	950	28	862	30	906
19	564	31	613	24	Mrs. A. ..	110	916	26½	758	27	594	27	626
29	477	30	491	..	Average ..	121	972	31½	871	25	680	27	771

DR. RANSOHOFF:

I hardly think a paper of such great value should go without some discussion, if only to give evidence the paper is appreciated. Not only those who do laparotomies but those who do general surgical work know one of the chief symptoms after operation is intense thirst. I have known patients to cry for a sip of water, as we have all of us, with the dread of giving it. It must be torture to these patients to go twenty-four hours without anything passing their lips.

THE USE AND ABUSE OF LOCAL MEDICATION IN EYE AFFECTIONS.

J. W. WRIGHT, M. D., COLUMBUS.

Relying upon the advances in bacteriology, the causes of many diseases which were formerly considered obscure, or were based upon theory alone, have been established, and the old materia medica of many affections has been modified or entirely replaced by that which science and experience have demonstrated as the most useful.

The science of bacteriology has benefited no branch of medicine more than that which relates to the diseases of the eye, for it has demonstrated that the most formidable inflammations to which the eye is subject are the products of bacterial or allied organisms.

What had been gained hitherto, in the way of mitigating and subduing these inflammations, was effected more through empiricism than by the rational method of a study of the causes, and the consequent deduction therefrom of remedies.

When Crede, a surgeon of the Lying-in Asylum of Leipsic, recommended that a ten-grain solution of the nitrate of silver be instilled into the eyes of all new-born children in order to prevent ophthalmia neonatorum, he did not probably base its prophylactic properties upon the theory that it was a germicide; but it had become known that strong solutions of the nitrate of silver would

cure purulent ophthalmia, and upon this fact alone I presume Crede based his theory of preventing the affection. The medical world rejoiced, however, that a remedy had been discovered that would prevent that terrible affection which has caused so much misery and filled the asylums with blind children.

An explanation of the manner in which the nitrate of silver solution prevented purulent ophthalmia was made by a prominent oculist after the gonococci in purulent conjunctivitis had been discovered, which was that the nitrate of silver solution acted as a cautery to the superficial layers of the epithelium, and thus destroyed the gonococci which had penetrated these layers, and which, he claimed, the milder disinfectants could not reach.

Although Crede demonstrated that about 11 per cent. of cases sank to 0.1 per cent. by the use of the nitrate of silver solution, yet there are those who have made an industrious study into the cause and the treatment of purulent ophthalmias who question the advantage of the procedure, and in fact doubt not that its breach would be better than its observance.

The skilled oculist of to-day recognizes that a ten-grain solution of nitrate of silver in the eye of an infant is dangerous, and will often set up an inflammatory action as destructive as ophthalmia neonatorum itself. We must remember that the cornea of a new-born child is delicate and immature ; its structure is not compact ; the epithelium is easily abraded ; and the sclerotic is so thin and loose in its structure that the reflex from the choroid is easily seen through it. Under these conditions even a five-grain solution is considered too strong, and it is now admitted that a two-grain solution properly applied is as effective a prophylactic as the stronger solutions, and that a 1:5000 solution of bichloride of mercury is far better than the silver solution, and much less liable to injure the child's eyes.

Under the old regime, the bluestone and solutions of varying strengths of nitrate of silver, sugar of lead and sulphate of zinc were indispensables. No one thought of making up a prescription for the eye without one or more of these as ingredients, no matter what the cause, whether due to the infection of a bacillus, or to the effects of an hereditary dyscrasia.

There is scarcely an affection of the eye in which these old remedies, the bluestone, the sulphate of zinc and sugar of lead are adaptable, but on the other hand are positively injurious. They should be expunged from the ophthalmic materia medica.

Two things have contributed to revolutionize ophthalmic therapeutics; one, the discovery of a local anesthetic applicable to conjunctival surfaces, and the other, the revelation that the purulent ophthalmias are the products of a specific bacteria, and the value of antiseptics in their treatment.

At the present time it is conceded that the very best treatment in the incipiency of a purulent ophthalmia, is to flush the conjunctival sac with a mild bichloride of mercury solution, and if this treatment is kept up several times a day by washing all particles of pus out of the sac, the discharge will cease in two or three days, and the conjunctivitis will subside in a remarkably short time.

If the ophthalmia is well under way when we have been called into the case, the treatment is the same, only it may be necessary to use the antiseptic solution oftener; the discharge will gradually cease, and the tendency is to recovery.

Simply instilling this solution into the eye from a dropper is not sufficient, for in this way it does not come into contact with but a part of the conjunctival sac, especially if there is much swelling of the lids and conjunctival chemosis. It should be applied with a small

syringe, the nozzle of which has been flattened so as to be readily intruded between the lid and the ball, pressure being made toward the lid to prevent injuring the ball. Before flushing, a few drops of cocaine should be instilled into the eye.

Other antiseptic solutions may be admissible in the purulent ophthalmias, but I doubt if any known remedy has the combined antiseptic and germicidal properties of the bichloride solution.

Atropine is of no value in ophthalmia neonatorum or any other affection of the eye of an infant, even if there is a condition demanding a mydriatic, for the reason that it will not dilate the pupil of an infant. While atropine is susceptible of doing great mischief if used in the eyes of those suffering from subacute or chronic glaucoma, yet there is no doubt that its use is too much restricted, especially by the general practitioner. The symptoms of an incipient iritis are often so indefinite that it is impossible to differentiate them from those of a catarrhal conjunctivitis, until great injury has been accomplished. In every case of conjunctivital irritation with a contracted and sluggish pupil, atropine should be instilled into the eye until there is thorough dilatation. This procedure would save many eyes. Excluding the purulent ophthalmias, iritis stands at the head of the list in the destruction of vision.

Carbolic acid is a great remedy in painful affections of the eye, especially in that resulting from corneal ulcer. It can be applied in from gtt.j to gtt.iij to the ounce solution. The carbolic acid solution serves a three-fold purpose: It is stimulating to the abraded cornea, it is antiseptic, and it is anesthetic. As an anesthetic, its effects are almost instantaneous, and are very lasting, and is specially adapted in cases of corneal ulcer of the phlyctenular variety.

A PLEA AGAINST THE MEDDLESOME TREATMENT OF ACUTE GONORRHEA IN WOMEN.

MARCUS ROSENWASSER, M. D., CLEVELAND.

The fact that we have as yet no reliable local treatment and no specific remedy for the cure of gonorrhea, does not deter authors of text-books and writers of journal articles from making positive assertions about the rapid cures effected by the "early and thorough" treatment of this disease. Perhaps in no disease does experience more often go counter to such careless and highly reprehensible assertions than in gonorrhea during the first two or three weeks of its course, or in the acute stage. The "early and thorough" treatment, first extensively advocated by our German confrères, was based upon a pathology which more recent observation has proven erroneous. Bumm has described the gonococcus of Neisser as a germ living only in the cylindrical epithelium of mucous membranes. Wertheim has since demonstrated the fact that the germ also thrives in squamous epithelium, in connective tissue, and on the peritoneum. The vagina has been regarded as the main seat of the disease, and has constituted the chief point of attack in the early treatment. We now know that it is rarely primarily affected, but serves merely as a catch-basin for the infected fluids that enter from below and

for the drippings that come from above. The disease has been described as ascending from vulva to vagina, hence to the cervix, and so on. Following the modus operandi of the sexual act, it becomes apparent that with the completion of the act, the vulva, vagina and cervix have been simultaneously exposed to infection, and that the spreading "up the vagina to the vaginal portion of the cervix" * is a theory rather than a condition. A modern author † proposes to cure the gonorrhea in this catch-basin in two to six days by "constant irrigation." He says it will take a little longer by using a "copious vaginal douche" every two hours by day and every four hours by night. He then continues: "If so much douching is not well tolerated or is not available, the disease can be rapidly cured by the dry pack." Again, "the douching, disinfection and packing should be repeated morning, noon and night for the first two or three days, and after that twice a day for a week." He destroys our faith in the cure by the following caution: "Attention should be given to septic urethral and cervical discharges, or the vagina may constantly become reinfected."

Can there be a greater concentration of brutal energy than is embodied in the original "pack," which is designed literally to skin the vaginal epithelium?

‡ "First of all the vulva and vagina are thoroughly cleansed of the adhering secretion by means of a 1:1000 sublimate solution; then, with the help of a Simon's speculum, the vagina and vulva, including every fold and recess, are energetically swabbed with a dossil of cotton-wool soaked in a one per cent. solution of the sublimate, and rubbed with it for several minutes, so

---

* Garrigues, Diseases of Women, p. 283.

† An American Text-Book of Gynecology, p. 197.

‡ Schwarz, quoted by Sinclair in his monograph on "Gonorrheal Infection in Women," (Wm. Wood & Co.) p. 385.

that the superficial sheaths of the epithelium containing the gonococci are removed. The Simon's speculum, or some other with separable blades (such as Bozeman's, etc.), is essential for the purpose in view; by this means it is possible to distend the folds of the vagina to their utmost extent, and to obtain a complete controlling view of the whole process, so as to avoid missing any of the diseased patches. Special care is taken with the introitus, which contains numerous folds.

"The next step is copiously to dust over the vagina and vulva with iodoform, which is still more effectively applied by rubbing it into the mucous membrane with the tip of the finger.

"To complete the process, the vagina is with moderate firmness packed full of iodoform gauze.

"If the treatment is very painful, a thing which depends upon the intensity of the disease process and the idiosyncrasy of the patient, a narcotic or anesthetic must be administered. The process is of value only when thoroughly carried out, but then it is certain to succeed.

"If as is usual in rubbing the vagina, there occurs extensive capillary hemorrhage, it is only a favorable sign, inasmuch as it shows that at the bleeding points the diseased epithelial covering is for the most part removed, and, at the same time, a large number of the superficial, perhaps diseased, capillaries are destroyed.

"The iodoform gauze is permitted to remain for three or four days, and then the whole process is repeated with the same thoroughness and over the same area. After four or five days more the gauze is finally removed, and then, for eight or fourteen days, the patient carries out a copious irrigation of the vagina with a sublimate solution of 1 in 2000. The vagina is red and raw after the second tampon has been removed, and there is usually a copious purulent discharge, but the gonococci

are annihilated, and have forever vanished." Sinclair's chief objection to the method quoted is "not so much its inefficiency as its severity."

The present method of rapid cure may vary in degree, but not in kind. The experience we have gained and the light we now have seem to me to warrant the abolition of this refinement of cruelty, and to justify the substitution of milder and more rational means.

It is generally conceded that gonorrhea is a germ disease capable of producing inflammation of mucous membrane, connective tissue and peritoneum; that, like other infectious diseases, it is self-limited; that transplantation upon new soil reinvigorates the enfeebled germ; that in mild cases under favorable circumstances, such as rest, and protection against irritation or reinfection, it runs a course of four to six weeks; that its chief habitat is the urethra, cervix and Bartholinian ducts; that it is rarely located in the vagina, except its membrane be delicate, moist and succulent, as it is found in children, virgins, pregnant and aged women; that it may simultaneously invade the entire genital tract and thus cause a pelvic peritonitis shortly after infection, and that peritonitis due to the gonococcus is adhesive, not suppurative.

Leaving out of present consideration cases with delicate vaginal lining, the parts of the sexual tract simultaneously infected are the vulvar entrance, including the urethra and the Bartholinian ducts, and the cervical canal. The sphincter muscles at the neck of the bladder and at the internal os uteri are the natural barriers against the immediate introduction of germs into bladder or cavity of the uterus. If these sphincters happen to be relaxed, the infection can at once gain entrance into these organs. At first the gonococcus only penetrates into the surface epithelium. After a time upon irritation it becomes more virulent, and it lodges deeper.

It is liable to forcible transportation by all manner of mechanical means, whether it be douche, finger, catheter, or sound. From the moment of infection the living tissues are engaged in resisting the invasion. Unless this reparative process be frequently disturbed, or the power of resistance be constitutionally insufficient, the vital forces will in about fifteen to twenty days have successfully thrown out a wall of limitation, or line of demarcation, beyond or beneath which the advance of the infection is stayed. This contact wall becomes gradually accustomed to the presence of the germs, which thus lose their former deadly effect, and themselves become exhausted for want of new supplies of favorable soil. The premature removal of protective, living covering, be it epithelium, lymph, mucus, or leucocytes, opens up non-resisting avenues for infection, and furnishes new food to invigorate the exhausted stock. Any treatment, therefore, which does not and cannot remove or kill all the germs, but does remove tissues that have become immune, weakens the resisting power of the remaining tissue, and thereby strengthens the remaining germs, besides supplying them with fertile soil for rapid reproduction.

In the treatment of acute infectious diseases we place the patient at rest, and surround him with the safeguards of diet, bowel movement, cleanliness, protection against reinfection, and prevention of all possible harmful influences. The contest between germ and life-preserving forces ends with the death and elimination of the germ and its toxic products. Only complications, or cases that pass into the chronic stage, require local treatment. Why not follow the same principle in the treatment of acute gonorrhea?

In cases seen very early urethritis is nearly always present. The usual "early and thorough" treatment does not apply to the urethra, and yet it is this un-

treated canal which gets well quickest, chronic urethritis being comparatively rare. In most cases seen later, urethritis is not present. The symptoms have disappeared before the patient is aware of any serious trouble. The frequent voiding of urine keeps the urethra clean. Whether its chemical quality plays any part in the rapidity of the cure is still unknown. Again, the Bartholinian ducts cannot well be included in the "early and thorough" treatment, on account of their inaccessibility. They either get well spontaneously, or become chronic.

The vagina and cervix constitute the great battlefield, upon which are concentrated all the squirt-guns and other deadly weapons, including the noxious fumes of iodoform, to be used in the "early and thorough" extermination of the gonococcus. As stated in the premises, the vagina is rarely infected. Our energetic belligerents had, therefore, better keep their powder dry and in reserve for the exceptional cases. The cervix then is the citadel to which they must lay siege in downright earnest. The subtle enemy has meanwhile retreated into the various subterraneous crypts and dungeons of the citadel, whence our friends will find it no easy task to dislodge or smoke him out. If they persist in pressing him too closely, they will find to their dismay that he will withdraw into the dome of the fundus, or even into the very pavilion of the tube, and there, rather than surrender, he will fire the magazine and bury himself and his tormentors under the ruins. It were better strategy to starve him out by cutting off supplies, than to drive him to desperation by assault. Let us cease fighting windmills and riding hobbies.

If the vulva alone is infected, the local treatment may be limited to frequent washing of the parts with weak solutions of boric or carbolic acid to keep them clean and to relieve the burning and itching. If, as is most often the case, the cervix is also affected, the vaginal

portion is gently wiped with absorbent cotton, and the upper vagina is filled with powdered boric acid every second or third day. Sexual relations are prohibited. In case of vaginitis with much pain and profuse discharge, we must put the patient to bed. Keep external parts clean, and relieve pain with opiates. Upon subsidence of the acute tenderness of the entrance to the vagina, non-irritating, cleansing douches, or the dry treatment with powdered boric acid may be given to diminish the amount and virulence of the discharge. Not until after the disappearance of acute symptoms is it advisable to begin more active local treatment, if any be needed. In pregnant women infected at term, the additional precaution of thoroughly washing the vagina with soap, and disinfecting with carbolic acid or creolin at the onset of labor, is indicated, just as is done in preparation for any vaginal operation. It goes without saying that the cervical canal be left undisturbed for a time. Local treatment for acute endometritis or salpingitis is of no value, and is too dangerous to be indulged in for pastime. The application of general principles in their treatment will suffice.

In conclusion, the so-called "early and thorough" treatment is to be condemned as meddlesome and mischievous for the following reasons:

It is based on a pathology now discarded as crude and imperfect.

It is not applicable to all the tissues simultaneously affected, hence it is no cure.

The results, at the end of the acute stage, are no better than are those of a more rational though less exacting treatment.

It is cruelly painful and often dangerous, requiring an anesthetic for its proper execution.

It is impracticable, even in the hands of an expert.

Though the treatment is irrational, inefficient, severe and dangerous, the physician who does not practice it is stigmatized as old-fashioned, negligent, and indifferent to the interests of his patient.

DISCUSSION.

DR. HUMISTON:

It is well known the doctor and I do not agree on the early treatment of gonorrhea. The doctor does not say whether he has had any experience along this line or not. I have, and have had good results, and shall continue to use the treatment as long as I obtain the results I have obtained during the last two years. The doctor states, when the vulva is affected, then wash thoroughly and frequently. Why does he object to the same when the vagina is affected? In the city hospital service we have a great many cases of gonorrhea, and when seen early I have been able to make them more comfortable in a short time, and in a few days be through with all active treatment, and after continuing the boracic acid treatment a while, have no further trouble. I do not believe the Bartholinian glands are involved in the majority of cases. If they were, we would have more abscesses in this region to deal with.

DR. ROSENWASSER:

I have been asked whether I have had any experience of my own. When I pick up any text-book of gynecology to study the subject, and find that after going through this treatment the patients are by no means cured but require still further treatment, and that too after having made the surfaces of the vagina and cervix raw and suppurating, I do not feel encouraged in attempting such a course, because the treatment I use gives me better results without all this painful detail. I have taken the trouble to examine quite a number of modern text-books, and do not find any of them treat of gonorrhea under the head of "gonorrhea" as an entity, but they treat of gonorrheal vaginitis under one head, gonorrheal salpingitis under another head, etc. We are

thus misled into treating gonorrhea in women by treating the vagina. Not comprehending the scope of the disease, we must signally fail in the treatment. Because abscess of the Bartholinian glands is rare, it does not follow that the ducts are rarely affected any more than that because the bladder is rarely affected therefore the inflammation of the urethra must be uncommon. The inflammation may remain in the duct, just as it may remain in the urethra or cervical canal.

LACHRYMAL OBSTRUCTIONS.

W. A. MELICK, M. D., ZANESVILLE,

Physician to the City Hospital, Eye, Ear, Nose and Throat Department: Lecturer on the Surgical Diseases of Eye, Ear, Nose and Throat, at the Zanesville Training-School for Nurses.

In presenting this subject before the Society, I do not hope to bring out anything that is new to the specialist, but there are certain features in the causation and treatment which I wish to emphasize. I do not wish to give an exhaustive treatise on this subject, as we have good text-books and good writers, to which every physician has access and may inform himself at will. Cases of obstruction, in the great majority of instances, are seen first by the general practitioner, and a few points as to the etiology and early management will not be out of place.

Occasionally we find cases where obstruction is due to a foreign body which has entered the punctum lachrymali, such as a hair, wheat-beard, or calcareous deposit which has formed in the canal or sac; but the great majority of cases are caused by catarrhal conditions of the mucous lining of the canal, either acute or chronic, thus forming a stricture and obstructing the free passage of the secretion from the conjunctival sac. It is these latter cases especially to which I wish to call attention,

as they are by far the more common. These cases we believe almost invariably have as a causation some trouble in the nasal cavity near the opening of the nasal duct.

The mucous membrane of the lachrymal sac and that of the duct form one continuous whole. We must bear in mind that while the lachrymal sac lies against the bone only on one side, and everywhere else is free, the lachrymal duct is enclosed on all sides by a bony wall. Accompanying the lachrymal duct through this bony wall is a wide plexus of veins analogous to the venous plexus beneath the mucous membrane of the inferior turbinated body. The swelling or engorgement of these veins alone is sufficient to entirely close the lumen of the duct. The lachrymal duct cannot be distended and is therefore the favorite seat of constriction.

The fact I wish to especially emphasize is: The constriction of the nasal duct, which forms the starting-point for blennorrhea of the lachrymal sac, develops invariably in consequence of afflictions of the nasal cavity.

We need but enumerate some of these conditions, which may be simple coryza, or it may be scrofulous or of syphilitic origin. In these cases a swelling of the mucous membrane of the nose exists, which extends by continuity to the mucous membrane of the nasal duct, being particularly due to the engorgement of the numerous veins lying between the duct and the bony canal—an engorgement which of itself is sufficient to close the lumen of the duct.

Tumors may conceal the lower orifice of the nasal duct, and thus cause stoppage of the flow of tears. The most frequent tumors of this kind are polypi.

It may be admitted that generally the ophthalmic surgeon proceeds at once to radical and operative methods when a case presents with dacryocystitis. I contend that in all cases tentative and palliative treat-

ment should be instituted before destroying the physiological function of the punctum; and especially should the nasal cavity be thoroughly examined, and any physiological condition removed, before jamming a rigid rod of metal down into the inflamed or at least narrowed canal, with its delicate lining of mucous membrane, and thus crushing the latter between the metal and bony walls of the canal.

Before resorting to any surgical interference I would strongly advise a preliminary treatment; the success attending it has led me to know that many cases can be cured without harsher methods. First of all, the nasal cavity should receive attention, and if any congestion or hypertrophy of the turbinated bodies exist, it should be removed, either by the galvanocautery or by application of tre-chloro acetic acid; or, should polypi exist, of course they should be removed.

In conjunction with the above preliminary treatment, a little manipulative device which is advocated by Burnett, and consists of the following procedure, should be faithfully and persistently carried out. First, the secretion of the lachrymal sac should be squeezed out by pressing with the finger over the sac, and the eye cleansed of the secretion. The patient should then be placed in a reclining position with the head back and turned to one side so that the inner canthus of the affected eye forms the bottom of a depression that will hold the antiseptic solution to be used.

The solution is as follows:

℞ Acid. Borici.....grs. x.
Sodii Chloridi.....grs. iij.
Zinci Chloridi.....gr. j.
Aquæ dist.....℥j.

With the inner canthus and punctum submerged with this solution, the sac is again emptied by pressure with

the finger from below upward. When the pressure is relaxed, the resiliency of the walls of the sac and canaliculi will suck in the antiseptic solution and bring it in contact with the parts hitherto filled with the purulent secretion. Again pressure is made over the sac, this time from above downwards, so as to drive the fluid through the duct towards the nasal cavity.

This manipulation should be repeated several times at each sitting, and the patient receive at least two treatments daily. This treatment can be easily carried out at home by the friends of the patient, after having witnessed the physician for a few times. It is sometimes necessary to slit the canaliculi by a single stroke of a pair of iris scissors or the canaliculus knife, in order that the fluid may more easily find its way to the canal and sac.

The above treatment when persistently carried out will be found effectual in a large number of cases. But, when organic stricture is present, this or any other palliative treatment will fail and the case must be treated by surgical methods. My personal experience again leads me to advise conservatism. The custom of running a canaliculus knife down into the duct, especially before resorting to milder methods, is barbarous and capable of doing much harm, and should be condemned; neither should probes larger than the size of a normal duct be used.

The varying diameter of the bony canal and the deflection from the normal straightness should lead us to proceed with caution in introducing the probes, lest we crush the walls of the duct and plexus of veins between the metal probe and bony walls of the canal. Recently a case of severe orbital cellulitis came under my observation consequent upon the passage of two large probes into the duct.

In summing up, the three points which I wish especially to emphasize are:

1st. In cases of lachrymal obstructions, always examine the nasal cavity for the primary cause.

2d. Do not treat the stricture alone, but remove the pathological condition in the nasal cavity.

3d. After palliative treatment has failed and surgical interference becomes necessary, do not use so large a probe that the delicate mucous membrane of the canal and the surrounding tissues are permanently injured.

SERIOUS COMPLICATIONS OF SUPPURATION OF THE MIDDLE EAR.

MAX THORNER, A. M., M. D., CINCINNATI,

Professor of Clinical Laryngology and Otology, Cincinnati College of Medicine and Surgery: Laryngologist and Aurist, Cincinnati Hospital, etc.

It is not so very long ago that purulent processes in the ear, no matter whether they were acute or chronic, were almost disregarded by otherwise well-informed physicians. Who does not remember having heard such remarks as "not to meddle with the ear," or "that suppuration was nature's own way to get rid of offending material," etc. ? And this in an age when the dawn of modern surgery with its brilliant achievements had spread to almost the remote corners of the earth! Is it strange, then, that there was a time when in cases where suppurative inflammations of the brain or its meninges were found associated with purulent middle-ear disease, the relation between cause and effect was thoroughly misunderstood? It was thought that the inflammation in the ear was the complication by extension of disease in the cerebral cavity downward, in an attempt to evacuate pus through this organ. However, anatomical and pathological investigations did not fail to clear the views regarding this question. Yet it remained for the application of modern surgical methods to show the true relation of cause and effect, and to

point out a way for the treatment of affections which had been considered hopelessly beyond the reach of any save the most impotent treatment.

The last fifteen years have witnessed a most remarkable development in the study of ear diseases. Not alone were aural surgeons interested by this unprecedented progress, but equally so the surgeons, the neurologists, the pediaters, and the general practitioners. This is due to the fact that the seriousness of purulent processes in the middle ear is now generally appreciated; their bearing upon the general health of the individual, and their great danger to life, are now universally understood. This latter point has most prominently been brought to light by numerous investigations made in large hospitals of different countries. It has been conclusively shown that in former years numberless patients died with such diagnoses as meningitis, typhoid fever, brain fever, marasmus (infantile and senile), eclampsia infantum, convulsions, intermittent fever, apoplexy, brain abscess, etc., whereas in reality they were victims of purulent middle-ear disease which had not been recognized.

It would lead me too far to go into a detailed statistical account of the percentage of deaths from ear affections in reference to all other causes, as well as in reference to the number of people who suffer from suppuration of the middle ear. Suffice it to say that autopsies made in large hospitals upon the bodies of *all* who died, have uniformly demonstrated the comparatively large percentage of ear diseases as a cause of death. Among other facts, this has been established with certainty, that at least one-third, and probably one-half, of all brain abscesses are of otitic origin, while almost two-thirds of all cases of phlebitis of the sinuses are due to diseases of the ear and the temporal bone.

The ways in which ear disease may be transmitted to the cranial cavity are readily understood, if we recollect the anatomical conditions of the tympanic cavity. The inner (medial) wall is formed by the osseous wall of the labyrinth with the round and oval window, above which the facial nerve in its canal, and the external semicircular canal are located. In this place there is often caries. Suppuration can readily pass into the labyrinth, or into the facial canal, and from here into the cranial cavity. The anterior wall is in close proximity to the carotid interna. This wall is perforated by one or two canaliculi carotico-tympanici. The posterior wall contains the entrance opening to the mastoid antrum and to the mastoid cells. These latter are again in the immediate neighborhood of the lateral sinus. The upper wall forms the roof of the tympanic cavity, and is, together with the roof of the antrum, part of the floor of the middle cerebral fossa. This plate of bone is often as thin as tissue paper, and has frequently small perforations. The lower wall forms the roof of the jugular fossa, and separates the tympanic cavity from the bulbus of the jugular vein. The outer wall, formed by the drumhead, is therefore the only one not in direct contact with important organs.

These anatomical conditions offer, as will be easily understood, open gates for the entrance of infectious matter to the adjacent important organs. The avenues of infection are either the bone itself, by being involved, by the suppuration, in the pathological process; or the suppuration is propagated into the neighboring structures through preëxisting roads, along the blood-vessels, nerves, lymphatics, or dehiscences in the bone, which are not at all uncommon. Any impediment to a free escape of pus from the tympanic cavity is in many cases directly responsible for the propagation of the infection into the cranial cavity.

Among the more serious complications of purulent middle-ear disease must first be mentioned caries and necrosis of the temporal bone. This may occur in acute suppuration, but is more frequently found during a chronic otitis media purulenta. The infectious diseases are known to be often associated with or followed by carious processes in the organ of hearing.

Necrosis is not so common as caries, although it occurs relatively more frequently in children. The mastoid process is often involved in the suppuration of the middle ear; we find acute inflammation of the mastoid cells with or without mastoid periostitis; and caries and necrosis of smaller or larger portions of the mastoid process. These may in turn lead again to cerebral complications. On the other hand the peculiar topographical relations between the mastoid antrum and mastoid cells on the one side, and the tympanic cavity on the other, both being connected by a very narrow opening situated high above the lowest point of the mastoid cavities, explain it, why pus accumulating in the mastoid antrum burrows, in some cases, its way through the tip of the apophysis and descends downward below and between the long muscles and vessels of the neck. In such cases the pus may find its way either into the pharynx, or into the mediastinum.

As the result of chronic suppuration, and usually combined with caries, soft masses are sometimes found to occupy the tympanic cavity, the antrum, and occasionally the mastoid cells. These are the so-called cholesteatoma, that much discussed and thoroughly destructive accumulation of epithelial masses. That partial or complete deafness, paralysis of the facial nerve, and disturbances of the equilibrium, may accompany or follow these occurrences is well known.

More serious, however, are the cerebral complications, which unfortunately terminate so often fatal-

ly, although of late years enormous advances have been made in the operative treatment of such cases, leading in a number of instances to a cure. It is gratifying to state that the technique of these operations has been perfected so much, and the indications for operative interference are being more clearly defined from year to year, that there is sufficient reason to believe that in coming years many cases will be saved by operation which as yet offer scarcely any chance for recovery. These complications are pachymeningitis purulenta externa, or extradural abscess, if the infectious masses find their way between the bone and the dura mater; if they perforate the dura mater, pachymeningitis interna and leptomeningitis purulenta will result; and if they enter the brain by way of connective tissue extensions, or blood-vessels, an abscess of the brain will be the outcome. Furthermore, by extension of the inflammation through the thin bony partition walls into the adjacent veins and sinuses, thrombosis and phlebitis of these blood-vessels are established. Thus, we find thrombosis of the lateral sinus and the jugular vein, and, though more rarely, of the superior and inferior petrosal and the cavernous sinuses. The phlebitis of the sinuses again may lead to general pyemia and septicemia. Finally, erosion of the coats of the carotid artery, the lateral sinus, or the bulb of the jugular vein has, although extremely rarely, caused fatal hemorrhage. And it is also a well-established fact that localized and general tuberculosis may develop from a purulent otitis media in individuals heretofore free from any tuberculous infection.

In addition, I desire to recall to you the fact that chronic suppuration of the middle ear may, without producing any cerebral or other local complications, be the cause of a continued general cachexia, leading sometimes to a fatal issue. Or, during the course of purulent

inflammations, symptoms of meningeal irritation may repeatedly arise, which, if not relieved, will be the forerunner of more serious complications. It may be well to state also that fatal meningitis has occasionally followed cases where the exudation was serous, sometimes without even perforating the drumhead.

In the limited time allotted to me I could only sketch in hasty outlines the principal points of this vast and most important subject, reserving a more detailed account of some of these affections, and the consideration of the prophylaxis and treatment of these serious complications for another occasion. But above all we must place the prophylaxis. We should never forget that Wilde's words stand yet undisputed "that we never can say where or when an otorrhea will end, or to what it may lead." While it is true that modern surgery has progressed enormously, so far indeed as to often save through an operation the life of a patient almost beyond the hope of recovery, it will be much more to the credit of the profession if these operations would become less and less necessary; and this goal can only be reached if the physicians at large, and not only the otologists, would become imbued with the importance of all exudative troubles, if they will remember that there is no spot in the human body where the retention of an insignificant amount of pus may lead to such serious complications, and if they will see that every case of suppuration of the middle ear receives an early and appropriate treatment.

CONCERNING THE TREATMENT OF LARYNGEAL TUBERCULOSIS.

FRANCIS W. BLAKE, M. D., COLUMBUS.

It is not my intention to elaborate upon the treatment of the local tubercular lesions in the larynx, but to urge the importance of observing the same.

In the effort to modify, combat and destroy the special cause for tuberculosis, attention is often diverted from the treatment of its local manifestations. The records of Brompton Hospital show that 50 per cent. of those dying from tuberculosis had an infection of the larynx; and at least 20 per cent. of all cases manifested laryngeal symptoms. Tubercular infection of the larynx, while seldom if ever absolutely primary, is not infrequently the first prominent disturbance for which relief is sought. Thus it is a focus from which further infection may extend; and the part being so readily accessible, local treatment may have a most important bearing on the management of the case. Again, in advanced cases of a more general infection, the local disturbance in the larynx is productive of the greatest distress. There is the most intense pain, increased dyspnea, inability to take nourishment, deprivation of intercourse by speech—in fact such an increase in the sufferings both physical and mental that we would but too gladly turn from their contemplation.

Sir Morell Mackenzie, in 1880, refers to all local treatment as at best but slightly palliative. Sajous, in 1889, says: "The possibility of recovery under appropriate treatment is sufficiently demonstrated to place the practitioner under the stress of considerable responsibility." Bosworth, three years later, speaking of the local laryngeal condition, says: "We may entertain a reasonable hope of arresting the morbid process." At this time Ingals adds: "It is not now the belief, as formerly, that all of these cases are fatal."

Cohen, perhaps, makes a less favorable prognosis than other recent writers. The methods of treatment introduced within about ten years, and which now command attention, may be considered under two classes: the milder or the insufflation of iodoform and the solutions of creosote and of menthol in oil (Rosenberg); and the more radical, as curetting and solution of lactic acid (Krause), and even ablation of infected areas.

My experience does not qualify me to generalize, but it is enough for me to feel encouraged in my efforts, and to urge others to make them likewise. A case is now under observation, in which ulcerations have healed and local symptoms have been quiescent for more than a year. Again, I have had a well-advanced case come, as long as strength would allow, for the relief and quiet obtained in no other way as from local applications. Even if it be but to minister, as in the case of a poor fellow, who one hot day in August could barely whisper that for two days he had been unable to swallow even a drop of water, you would have your reward in placing in his trembling hands a cup of clear cold water, and seeing the look of gratitude and relief as it passed over his parched and fevered throat. And so I say, treat these lesions locally. In doing so you may hope to successfully combat them, or at least remove more discomfort than you can drown

out with opiates, which depress and impair the nutrition of your patient.

To be successful, any line of treatment selected must be most patiently and persistently carried out, due regard being given to constitutional measures. Often the hearty coöperation of general practitioner and specialist may yield the best results; for there is an amount of detail in the successful management of these cases, which is best maintained by the work of one supplementing that of the other. There is so prevalent an impression that when tuberculosis invades the larynx the case is hopeless, that I have thought in the light of present advancement and in the hope of better things to come, to present the subject in what you may regard an optimistic manner.

It is not in the province of this paper to compile the proofs of increased success in treating laryngeal phthisis, but these proofs are accumulating and incontestable. The difficulties attending the ideal conditions of treatment are many and hard to overcome; but we must not fall from the ranks of all true physicians, who are hoping and striving for the perfection of resources which shall give us that ultimate victory over ignorance and disease which it is our noble mission to fulfill.

SPECIFIC URETHRITIS IN THE MALE: ITS COURSE, COMPLICATIONS, AND TREATMENT.

WILLIAM THOMAS CORLETT, M. D., L. R. C. P. (LOND.),
CLEVELAND,

Professor of Skin and Venereal Diseases in the Western Reserve Medical School; Physician to the Skin and Venereal Departments of Charity Hospital and the City Hospital; Member of the American Dermatological Association, and of the Dermatological Society of Great Britain and Ireland, etc

---

Like the history of man, the early history of gonorrhea is evolved from tradition. That Moses, the great lawgiver and sanitarian of the Israelitic nation, was familiar with the disease is evident from records that have come down to us. It is interesting to note in comparatively modern times, the fifteenth century, gonorrhea was well-nigh lost sight of in the greater calamity that befell the human race in the outbreak and spread of syphilis in Western Europe. Incredible as it may now seem, it was not until the beginning of the eighteenth century that Hales taught the duality of gonorrhea and syphilis, which was controverted by the experiment of John Hunter upon himself. Benjamin Bell endeavored to stem the tide against the identistic theory, but not until Ricord in 1831-7 clearly demonstrated by 667 inoculations that gonorrhea and syphilis were in no way related to each other did the general

acceptance of the duality and the complete separation of the two diseases take place.

The modern epoch of specific urethritis dates from Neisser's discovery of the gonococcus in 1879. The therapeutic value of the discovery, however, has not as yet become clearly apparent, although much has already been done, and more must certainly follow.

From a diagnostic and prognostic point of view the discovery of the gonococcus is invaluable. From experiments made it has clearly been shown that it attaches itself to mucous membranes covered with pavement epithelium, and soon permeates between the cells of the outer layer into the submucous structure, where it proliferates, causing the phenomena which we call inflammation. There is a difference of opinion among investigators as to the soil best suited to the growth of the gonococcus. Finger maintains that it thrives best in an alkaline medium, while others have found media having an acid reaction most favorable to its growth. Be this as it may, clinical observation teaches that the soil becomes exhausted in time, leading to a spontaneous evolution and recovery. This may be due to the deleterious effect of the pus-cells, as some maintain, or to the general resistance of the tissues to the invasion of a foreign body. On this point there is a fertile field for original research. Confining ourselves to clinical observation, this spontaneous recovery, according to Finger, takes place on an average of eight weeks. Unfortunate it is for many victims of the complaint that this *vis medicatrix naturæ* is not more generally recognized by medical men. In the writer's experience with the general zinc and lead injections so much in vogue, the duration of the disease far exceeds this limit, and posterior urethritis with periurethral abscesses are of more common occurrence than from statistics of untreated gonorrhea we might reasonably expect.

Several years ago, failing to realize the brilliant results one had been led to expect in the treatment of specific urethritis in its various forms, I made a sojourn to some of the more noted hospitals devoted to venereal diseases in the medical centers of Europe, but with less practical benefit than was expected, and hopes of obtaining distinction in this special field perceptibly fell. At the Hôpital du Midi, in Paris, the expectant plan was followed; in other words, little or nothing was done during the early stage except to regulate the patient's diet and administer some bland alkaline draught. After the activity of the inflammation had subsided, astringent injections were used. In Germany and Austria various injections were also in vogue, while at the Lock Hospitals in London teaspoonful doses of powdered cubebs were given. This in brief comprises the various methods observed in the treatment of gonorrhea, which did not differ materially from the treatment as given in the text-books of the time. I returned without any dominant system of treatment, but with a clear field for original observation, untrammeled by traditions or brilliant examples, hence my apology for this communication, which will deal with personal observations of the past three years.

Beginning in September, 1893, all cases of gonorrhea seen in dispensary and hospital practice were subjected to a local antiseptic treatment, which consisted of flushing the genito-urinary tract with a solution of mercuric chloride, which varied in strength from 1:50,000 to 1:20,000, the average being 1:30,000. The average duration of the disease was six weeks, complications 60 per cent., of which posterior urethritis contributed the greatest number. In this series the treatment was begun during the first week of the disease. In another series of fifteen cases a solution of silver nitrate was used in the same way, 1:25,000. In this series the duration was somewhat longer, being six and

three-tenths weeks, although the complications were but 58 per cent., posterior urethritis being also most frequently met with.

The following year (1894) efforts to destroy the gonococcus *in situ* by direct applications were discontinued, or modified as follows: During the first week, in some cases during the first fortnight, the treatment consisted in limiting the diet to easily digestible articles, such as milk, bread, soft-boiled eggs, etc. During the day three pints of hot water were taken in divided doses one hour before meals. Bodily exercise was restricted as much as possible, and if much pain or smarting was complained of, tablespoonful doses of the infusion of triticum repens, or tablets of salol and boric acid, containing five grains each, were given four times a day. No local treatment was employed.

As soon as the inflammation began to subside, which usually took place during the first fortnight, creosote in capsules of from one to two minims after meals, or a modified Lafayette mixture, was given.

℞ Creosote.....gtts. xij.
Bals. copaibæ
Spts. nitrici dulcis.....ää ʒj.
Liq. potass.....ʒij.
Ext. glycyrrhizæ.....ʒss.
Misce et adde
Ol. gaultheriæ.....gtts. xvj.
Syr. acaciæ.....ʒvj.
Sig. ʒiv t. i. d.

When the disease further receded, as evidenced by the discharge becoming pale and watery, and provided no complications were present, local applications were made. For this, a rubber syringe holding from one to two ounces, and having a smooth, conical point, was used. The meatus was grasped firmly about the nozzle,

thus distending the folds and pockets of the urethra, and the solution retained several minutes. This was employed at first only at night, but after a few days it was used also in the morning. Care was taken to direct the patient to urinate before using the injection. The potassium permanganate (gr. j to ʒx) gave the most satisfactory results.

The observations in thirty cases were as follows: The duration, 5.5 weeks; complications 50 per cent., of which posterior urethritis was the most common.

From the foregoing it may be seen that early injections of mercuric chloride and the silver nitrate are less useful in the acute stage of gonorrhea, especially when used by the patient at home, than general and internal treatment. In hospitals, or when the patient returns for urethral flushings twice a day, better results may be obtained.

The treatment of chronic specific urethritis is of more practical moment, and, withal, one of the most difficult affections of the urinary tract to eradicate, so that the saying so often repeated by Ricord, "*Une chaude pisse commence, Dieu le sait quand elle finira*," holds true in many cases to-day.

First, it is necessary to locate the disease, *i. e.*, whether in the anterior or posterior urethra. This is done by the breaker-glass test, or by the endoscope. Anterior urethritis, when diffused, is best treated by forcible distention as previously described, or with a fountain syringe. The force of gravity is sufficient to distend the follicular pockets and sulci of the urethra, without forcing the fluid past the *compressor urethræ* muscle. When limited to small areas, direct application through the endoscope should be made. Of the drugs used, the permanganate of potassium, from a thirtieth to a quarter of a grain to the ounce, has given excellent results. Quite recently argonin has been em-

ployed. This is a silver-proteid compound formed by the combination of casein of milk and silver, producing a whitish powder soluble in water, but not precipitated by sodium chloride or albuminous fluids. My experience with the drug in the treatment of anterior urethritis after the acute stage has subsided augurs well for its success, although as yet sufficient data have not been collected to speak authoritatively on the subject.

Posterior urethritis, like anterior urethritis, presents both the acute and chronic varieties, although the latter is far more frequent, and is especially rebellious to treatment. In the acute form, the treatment does not differ in main from that recommended in acute anterior urethritis, viz., restricted diet, copious bland drinks, alkaline diuretics, and if much pain be complained of, an opium and belladonna suppository in the rectum. Instruments should not be passed into the posterior urethra, but in some cases the posterior urethra and bladder may be flushed with some bland substance, the technique of which will be described under the next variety.

No disease of the genito-urinary tract gives more annoyance to both patient and physician than chronic posterior urethritis. Of the various methods of treatment, I believe the best to be the following: A fountain syringe, or what is better a porcelain can, holding a pint, is placed six feet above the chair upon which the patient sits, with a long tube to which a nozzle is attached, introduced into the urethra and firmly grasped by the thumb and finger to prevent the escape of the fluid. A continuous pressure is thus maintained against the *compressor urethræ*, which finally relaxes and the fluid passes into the posterior urethra and bladder. This is to be repeated once a day. Care should be taken that the injection used is not too strong. The bladder should contain a small quantity of urine which

must be voided after each flushing. Of all the drugs used the permanganate of potassium (gr.ssj to ʒ̣vj) has given the best results. The water should be heated to 100° Fahrenheit.

In conclusion a short *résumé* may be given as follows:

1st. It should be borne in mind that the disease is self-limited, and finally disappears of its own accord.

2d. As yet we know no means by which the gonococcus may be quickly destroyed, without working irreparable damage to the urethra.

3d. The free discharge of pus favors the elimination of the gonococcus.

4th. The frequent passage of bland urine seems to favor the limitation of the disease to the anterior urethra; it also mitigates the suffering of the patient.

5th. Undoubtedly certain balsams favor the elimination of the poison, although their action is as yet unknown. Creosote promises even more in this direction.

6th. Late in the course of the disease, when the discharge consists of a thin mucus-like substance, topical applications of an astringent nature hasten recovery.

7th. Recovery may be regarded as complete, when, after repeated examinations, the specific organisms cannot be found, either in the shreds of the so-called *tripper-fäden*, or in the mucus discharge.

CONTAGION AND DIAGNOSIS OF SCARLET FEVER.

J. S. HALDEMAN, M. D., ZANESVILLE.

In discussing this subject I shall pursue the Hebraic order: Take the last first, and the first last, reading it from right to left. Therefore fever, and the kind of fever, will first claim our notice.

What is fever? This is a question that has always been of very difficult solution by pathologists of the greatest minds, in ancient or in modern times. Perhaps as good a one as can be given is that given by Gould, which is, "that it is a systemic disease," if disease it may be called. Perhaps the idea would better be expressed if it were called a symptom of disease "which shows itself in elevation of temperature, quickened circulation, catabolism, and deranged secretions."

The various forms of fever are multitudinous. That with which our paper has to do is of the exanthem (eruptive) variety, which the name denotes. This family also has a very numerous progeny, among which scarlatina holds a very conspicuous position It is an acute, specific, epidemic, and somewhat contagious disease, known by a scarlet flush, showing itself first in the face, extending itself speedily over the body, and ends in desquamation about the seventh day. The disease is most frequent in children of about the age of five years; after

that the liability is less, as the years of the individual multiply. One attack, as a general thing, immunes from another; but not as certainly as variola, rubeola, varicella, pertussis, parotitis, etc. Dr. Billings says, in his First Principles of Medicine, it may recur in the same person; he has known it to do so three times. Dr. Willan says he only knew of two cases out of two thousand. In the *Journal of the American Medical Association*, May 9, 1896, we have a statement from Dr. H. M. Byall, of Montpelier, Ohio, of the recurrence three times in the same patient, first in January, second in March, and third two weeks after the full recovery of the second attack; and what is especially noticeable, there was a free desquamation following every recurrence.

Now, what should concern the physician most is to know definitely when he has a veritable case of scarlatina. In order that he may, he must study closely and well its diagnostic symptoms, which I am fearful many do not, or else the results in their practice do not indicate it. "By their fruits ye shall know them." I do not mean so much the number of deaths they may have had as the number they claim they have cured. Among the cured of their tabulation of cases, doubtless many were never afflicted with it. I have been called to treat cases recently nominated scarlatina by those who had them in custody, when the pathognomonic symptoms were wholly absent.

Prior to the eruption we have nothing to insure us that we have a case of scarlatina, which is from one to two days. The fever during this time has symptoms common to any fever. When, however, after a day or so, a flush manifests itself, we may begin to cast about in our minds to ascertain which variety of the exanthems we may have to contend with. There are some eight varieties. You will find them profitably tabulated in

Gould's Illustrated Medical Dictionary. If the flush punctuates before it becomes confluent, we may suspicion strongly that we have a case. If this does not occur, measles may be taken for it. There was a time when they were considered identical. Erythema may be taken for it. The latter's duration, however, is shorter, and lacks punctuation. There are many symptoms in common with scarlet fever and diphtheria, but they can readily be differentiated. Scarlet fever has no tough, spongy exudation called false membrane. It may have white or yellow blisters, ulcers and sloughings, which make the mouth very foul and offensive. The fauces and palate may be involved, red and thickened, and the glands cervical and oral greatly swollen. But if a tenacious, thick, and slightly elastic membranous exudation forms and reforms when thrown off, then we dare no longer call it scarlet fever but instead diphtheria. Should, however, the papillæ of the tongue enlarge and become prominent, and give the strawberry appearance, and the entire oral cavity become red and inflamed, giving the aspect of a heated furnace, then we have veritable scarlatina. In the very incipiency of the fever, the tongue may have a white film, but this in a few days will disappear and assume the red aspect as already detailed. Desquamation is not a decided and reliable symptom, and yet I am free to say we but seldom have a case without it; it is more properly a sequela, because there are other eruptives that desquamate. A pathognomonic symptom must be one that inheres only in the disease it characterizes. For instance, the strawberry tongue shows itself only in scarlet fever, and the thickened and tough mucous exudation only in diphtheria and croup; the latter is none other, in my opinion, than laryngeal or tracheal diphtheria. So we might continue our illustrations. Then be assured, when we have a red and thickened fauces, and swollen palates, oral and cervical

glands, *without exudation*, and an enlarged strawberry tongue, we have a case of unmistakable scarlet fever.

We come now to notice the contagion of the disease. In the outset we stated that it was somewhat contagious, but not so general as some others of the exanthems. There are many families in which it occurs that there are only one or two, it may be three where they are large, that take it. This, I think, is mainly owing to the lack of susceptibility in the system to it. Such never would take it, however often they might be exposed. It is not so with smallpox, measles, etc. In these there appears to be no immunity, only exceptionally, now and then, in a very great while. I have known one case of variola where it recurred in the same person three different times. The contagious aspect of the disease I think has been greatly magnified, perhaps not so much by creditable authors as by the general practitioner of to-day. The mania has become pretty widespread. The boards of health have pretty generally caught it. In this they certainly err. These boards, in a great measure, mold public sentiment. They should be careful to make no unwarrantable statements, such that the orthodoxy of medicine would not justify; for I take it that there is orthodoxy and heterodoxy in medicine, as well as in theology. Most all our standard works are reliable. I need not specify.

Wood, in his treatise on the Practice of Medicine, says "it is generally believed to be of a contagious nature." This, he says, has been doubted by some. His own opinion is "that it is only faintly so." "The cause generally transfers itself through the medium of the atmosphere." The same author says "it is doubtful whether it can be communicated by inoculation," though cases are reported in which it has succeeded. Dewees says "he had never seen any decided proof that it had communicated itself." Dunglison says,

"The disease is generally regarded as eminently contagious, but doubt may and does exist on this subject." Hare, perhaps the latest authority, says "we have no verified knowledge of the exact nature of the specific cause of scarlet fever, but we have much useful knowledge of its behavior." He says: "Perhaps the specific poison or cause is reproduced in the throat of patients, and may be disseminated with the sputa, and drying does not destroy the contagion. The dust should be considered dangerous. So all the excreta. The most common source of the contagion is in the desquamation." Filth of any kind, whether produced by the putrefaction of animals, or vegetables, or, in a word, anything foul connected with "old Mother Earth," forms a nidus for the virus of the disease, whatever that may be, or wherever found, whether in the domain of bacteriology or the miasm of morasses, or the stinks of every variety of cesspools in city, town, or country.

THE ETIOLOGY AND PROPHYLAXIS OF PUERPERAL SEPSIS.

R. E. Skeel, M. D., Cleveland.

During the last five or ten years no subject has received more attention from obstetrical writers and investigators than that of puerperal sepsis in all its phases, and some of the factors entering into its causation, and consequently to be considered in relation to its prevention, have been settled, while others are still undecided and must be made the subject of further study. Notwithstanding the amount of light already thrown upon the factors which combine to render the puerperal woman a victim to the various forms of sepsis peculiar to her condition, and the many deductions as to treatment, etc., drawn therefrom, the death-rate from this cause, especially in private practice, continues lamentably high.

In a late number of the *American Gynæcological and Obstetrical Journal*, C. S. Bacon, of Chicago, has carefully gone over the death reports of that city, and he concludes that out of every 1,000 women confined, four and a fraction over die from sepsis, and that out of every 1,000 women during the child-bearing period, seventy die as the result of puerperal sepsis. He has ruled out of this computation all deaths reported as due to typhoid and malaria, and inasmuch as numbers of septic

cases are reported as due to these diseases, his average must be below the actual mortality rate. On the other hand, Garrigues, in the American Text-book of Obstetrics, says that the actual percentage of septic deaths during the puerperium is nearer 1.12, or 11.2 in every thousand, and that out of every six women during the child-bearing period, one dies of sepsis, and it is probable that Garrigues' statistics are nearly correct. It is safe to estimate that for every one that dies, ten are ill ; and basing our estimate upon these figures, 11 per cent. of all women who are confined suffer from some form of septic fever during their convalescence.

In the same journal there also appeared an article by Jewett, of Brooklyn, in which the statistics of many of the most prominent obstetricians of this country were given, and the general average of deaths from sepsis both in hospital and outdoor practice was only one in eleven hundred, and many of them reported absolutely no septic deaths in private practice. Compared with the former statistics quoted, this shows that in general practice there is far more mortality than in the cases confined in the maternity hospitals, and even those confined in the outdoor clinics conducted in the dirtiest tenement-house districts. I think these figures abundantly bear out the statement first made, viz., that the mortality from puerperal sepsis, in general, is far too high, and that there is still sufficient ground for agitating the questions of causation and prevention.

Scientifically, the doctrine of autogenetic infection is almost impossible, unless a septic process arising from a ruptured pus-tube might be considered as such, for it is difficult to conceive of infection arising from the patient's own bodily secretions; but clinically, I believe auto-infection to be not only possible but quite common, if we consider auto- or self-infection to mean an infec-

tive process arising from infectious material present *in* or *upon* the patient's body previous to labor.

Bacteriologists are at variance as to whether the normal vaginal secretions can contain virulent micro-organisms, or even the ordinary saprophytes; Döderlein, as is well known, contending that all micro-organisms not normal to the vagina are destroyed by the acid vaginal mucus, while other competent men find germs of various kinds in the vaginal mucus and even in the normal lochial discharge. The positive demonstration that such germs are sometimes present outweighs by far any assertions to the contrary, and I think it may be taken for granted that the vagina is, under ordinary circumstances, an infected canal, but that the vaginal secretions have an inhibitive effect upon the virulent germs present, and thus lessen to a marked degree their power for evil.

It is well known and easily demonstrable that if there is retained lochial discharge, or if portions of membrane, placenta, or any other organic material is retained within the birth-canal, a form of sepsis—that is, sapremia—will almost invariably arise, and it is especially apt to do so if material is retained in such manner that it gives an avenue of communication between the vagina and uterus, as the latter is practically always aseptic. In other words I believe it is practically certain that the ordinary bacteria of putrefaction are present in the vagina following labor, and altogether likely before labor as well, and that associated with them are the pyogenic cocci, diminished in virulence, it is true, but capable of setting up serious trouble, provided proper opportunity is afforded them for growth, and this opportunity is furnished when dead organic material stagnates in the vagina or even in the uterus.

If this is true, then the question is a legitimate one, why does not infection follow every case of labor? and

in replying to this we may see our way clear to some practical methods for the prevention of sepsis.

In the first place, there is effected during labor a mechanical cleansing of the vagina by the passing of the child's head and body, which distend that canal, smoothing out the rugæ and mechanically forcing out of it any contained material. Following upon this the passage of the liquor amnii, blood, and placenta affords a further means of cleansing, more, much more efficient than any douche could be; and when we add to these factors the probable fact that the contained organisms are of such a species or such a degree of virulence that they are unable to grow in living tissue, but only in dead, and that drainage is ordinarily free and does not allow of the accumulation of a suitable culture-medium, the explanation of the freedom from infection of cases which do not suffer by reason of unclean contact is sufficiently clear.

When, however, manual or instrumental interference has carried vaginal germs into the uterus, where they may grow upon the clots in the mouths of the uterine sinuses, or even upon the thin layer of uterine decidua, or when for any reason there is retention within the vagina or uterus of lochia, membranes or placenta, we may have developed that form of sepsis which is ordinarily unaccompanied by any inflammatory reaction at first, and which reveals itself as a pure sapremia at its beginning, having as its evidences fever and foul lochial discharge only. Sepsis having this origin, and presenting these evidences, is also, I believe, at the present time more common than the severe forms, owing to the fact that antiseptic precautions have been so much agitated that contact infection is becoming less and less frequent.

On the contrary, it is possible to ascribe several sources from which those severe forms of infection arise,

which vary all the way from a localized pelvic peritonitis to the acute septicemia of Garrigues.

First, they may arise from a ruptured pus-tube or the squeezing out of pus from a tube which is the seat of a purulent non-cystic salpingitis. These cases must be rare indeed, inasmuch as the probability of pregnancy is so slight.

Secondly, such a case might have its origin in a gonorrhea of the genital tract which had not spread to the tubes; but these cases must be infrequent also, for reasons similar to those already given, unless the gonorrhea were contracted subsequent to pregnancy.

The third class of cases in which distinctly serious symptoms might supervene would include those of the type first mentioned in which sapremia had occurred and had been neglected or improperly treated, and general septicemia or pyemia resulted, and this class might also include cases of septic phlebitis caused by the detachment of the clots in the uterine vessels, these clots being the seat of infection of possibly a mild nature.

The fourth, and most important of all in the class of severe and dangerous infections, is that form which arises by reason of contact with the genitalia of virulent micro-organisms, these germs being carried to the woman by the hands of the physician or nurse, or by the instruments, douche appliances, etc., which are used. I believe it can also be safely asserted that the reason this class of cases is so virulent is that the organisms which give rise to the septic process are capable of life, growth, and reproduction in living tissues when once introduced there, and that they do not need the intervention of culture media as do the saprophytes which are responsible for pure sapremia. As is well known, this form of puerperal sepsis is oftenest ushered in by a chill, fever, and pain, due to

endometritis, these symptoms to be rapidly followed by those of pelvic and general peritonitis, with death too often closing the scene; or death may supervene with such rapidity that no local inflammatory symptoms have time to manifest themselves.

Having dwelt so long upon the etiological factors, but little time can be given to the consideration of the methods of prophylaxis; but such as are given are easily deducible from the causation of sepsis in its various forms.

First, then, in order to prevent those forms of sepsis depending directly upon the presence within the vagina of the germs of putrefaction and possibly also in a modified form of the cocci of suppuration, it is necessary either to kill the organisms or prevent their multiplication. Naturally the first method was first thought of, and for a number of years the ante-partum douche has had its firm advocates, and not only ante-partum but post-partum douching with antiseptic solutions has been vigorously practiced and taught. Upon strict investigation, however, it is easily discovered that results have not been as good in douched as in undouched cases, other things being equal, and the reasons therefor are not hard to find. In the first place, the use of one, two, or even a half dozen douches of antiseptic solutions, of a strength safe to the patient, could not reach and harm bacteria protected by the vaginal mucus and hidden in the vaginal rugæ; and another very valid reason is, that there is constant danger of introducing into the vagina poisons far more virulent than those already there. As Lusk truthfully says: "True midwifery antisepsis consists not so much in douching as in the furthering of physiological processes, and it is to these that we must turn our attention in normal cases." The securing of firm and continuous uterine contraction and retraction, that there may

be no accumulation of clots, and the complete removal of all placental and membranous debris, will do more to prevent sapremia than all the douche-bags in existence.

Last, but not least, is the promotion of drainage during convalescence, and I fear that this is the precaution most frequently neglected. To insist that the patient shall remain continually upon her back, with the head low, is to invite the stagnation and decomposition of the lochial discharge in the posterior vaginal cul-de-sac, and it should be the invariable rule—unless for a specific reason, such as a lacerated perineum—that the puerpera should, after the first twenty-four hours, assume the sitting posture during micturition and defecation; and not only that, but she should be warned not to lie quietly in the recumbent position, but to turn from side to side and lie with the shoulders elevated upon pillows to such a height that the lochia will easily discharge over the perineum without first accumulating behind it. With such precautions I believe that sapremic fever will be a thing of the past, excepting when due to the unavoidable retention within the uterus of portions of the placenta, or hypertrophy of the decidua, both of which conditions are relatively rare.

Of course, these remarks refer solely to the prevention of sepsis at term, and not to those cases which are so common subsequent to abortion, which are due to the retention within the uterus of the embryonic placenta or decidua vera, or both. These cases are to be prevented by the simple emptying of the uterus subsequent to every abortion, if nature has not already done so.

Concerning the graver forms of sepsis, due to pyogenic organisms or possibly gonococci, not much remains to be said outside of the conventional rules for securing asepsis. Allowing that salpingitis is occasionally the source of infection in these cases, I know of no

irritating and has stained the linen yellow. I believe before labor the vagina should be rendered as aseptic as possible and in the manner the Doctor has described. It is very easy to have the soap and bichloride tablet, and hot water is to be found in every house, and with these agents you can then render the woman safe to go through labor. There is one point I did not hear the Doctor lay special stress upon, owing to my inability to hear all the paper, and that is the immediate repair of injuries at the time of labor. If this can be done aseptically, it should be done at once, and thus prevent the liability of having a long sickness through infection. I believe in the immediate repair of injuries to the vaginal outlet during labor.

DR. SKEEL:

I am particularly gratified that as one of the results of this discussion, no one has arisen to say that he never saw a case of puerperal sepsis and that he had been practicing some 50 years, which is one of the set remarks such a paper usually meets.

Concerning the discharge the trouble is to tell whether it is really an infectious one, owing to the normally free leucorrhea of pregnancy. Neither can you always tell whether the discharge is gonorrheal or one due to any other form of sepsis. It has been attempted to show that when the discharge is acid pathogenic cocci could not live in it, but when alkaline they could be present; but that is hardly a safe guide to go by. Where a discharge is irritating, however, particularly when yellow in color, and has persisted up to the latter months of pregnancy, a thorough cleansing is necessary.

As to the immediate repair of injuries to the soft parts, I do not think that anybody at the present time doubts the advisability of repair of the perineum. After a confinement is over, in a private family, especially if there is nothing apparently wrong, it takes a great deal of nerve to tell the friends of the patient that something more must be done. If the perineum is ruptured, you can easily tell them that; but it is difficult to insist upon the repair of a cervical tear which they cannot see. So at the present time, while I believe emphatically in the immediate repair of the perineum, the advisability of primary repair of the cervix, I think is still a question.

SALPINGITIS.

F. F. LAWRENCE, M. D., COLUMBUS.

Inflammation of the Fallopian tubes may be classified, first, as to character: acute, subacute, and chronic; second, as to nature: septic, and catarrhal.

CAUSES.

Salpingitis is always secondary to endometritis, ovarian hyperemia, ovaritis, or perimetritis or parametritis. When it is of the non-septic or catarrhal form, it is secondary to that form of endometritis. When it is subacute, it is secondary to ovarian hyperemia as a rule. When it is septic, or suppurating, it is secondary to a septic or purulent endometritis, a perimetritis, or parametritis. The primary cause of the endo-, peri-, or parametritis may be any one of the following, or a combination of two or more of them: Gonorrhea, although I am inclined to think this cause has been given too much prominence; abortion, which is a very frequent cause; unclean midwifery; the use of the sound; the extension of a purulent vulvitis, which I have seen in very young children, in whom there could be no possibility of a specific infection. I believe that some cases of pyosalpinx are due to a peculiar condition of the patient, similar to that we often see in general surgical work, in which there is a

tendency to suppuration upon the slightest injury or inflammation, and in which we can not possibly trace it to any extraneous source of infection.

The results of salpingitis are: Sterility, caused by occlusion of the tubes or extension of the inflammation to the ovaries and their destruction; extra-uterine pregnancy, resulting from destruction of the ciliated epithelium of the tube; pelvic abscess; peritonitis; chronic invalidism; in chronic suppurative cases we may get septicemia or pyemia.

The study of the disease cannot be made either practical or intelligible without a brief study of the circulation, nerve supply and lymphatics, with a supplementary study of the histology of the tube and tubal mucous membrane.

The circulation of the tube is through branches of the ovarian artery. The veins follow the course of the arteries between the folds of the broad ligament, and empty into or join the ovarian veins, which empty on the right into the inferior vena cava and on the left into the renal. The left ovarian vein, like the left spermatic in the male, has no valves. The nerves are from the inferior hypogastric and a branch from one of the uterine. The lymphatics from the body and fundus of the uterus, the Fallopian tubes, and ovaries form a continuous chain and discharge into the lumbar glands.

The Fallopian tube is composed of unstriped muscle, which is continuous with the uterus, and, like the fibers of that organ, is arranged in longitudinal and circular layers. Externally the tubes are almost surrounded with a layer of peritoneum coming off from the broad ligament (the mesosalpinx). Between the peritoneum and the muscular tube there is loose connective tissue. The tube is lined with mucous membrane covered with ciliated epithelium. This mucous membrane is thrown into longitudinal folds, which are thinner towards the

uterine end, thicker toward the fimbriated extremity. The fimbria are the folds of mucous membrane extending beyond the tube proper, together with a few muscular fibers, and hence have no peritoneal covering. J. Bland Sutton has shown beyond doubt, that, contrary to the commonly accepted idea, the mucous membrane of the Fallopian tubes is thrown into folds, which, when infolding form secreting glands, the cells lining the recesses being the "large regular, columnar" epithelial cells common to the secreting glands, especially of the uterus. This fact, as will be shown farther on, will aid much in explaining the agonizing premenstrual pains, so prominent a feature in salpingitis.

From this anatomical study it can be clearly seen that salpingitis in any form is rarely if ever a primary disease, a conclusion which is borne out by clinical experience. Further, it demonstrates the position that an acute inflammation of the Fallopian tubes can rarely if ever be separated from an acute attack of ovaritis or metritis by any method of differential diagnosis, and emphasizes the futility of digital or other examination when made for that purpose. Hence, in the study of acute salpingitis I shall make no effort at such an impracticable differentiation.

The pathology of acute inflammation of the Fallopian tubes is the same as that of inflammation of mucous membranes in general, with two factors added, viz., the destruction of ciliated epithelium and the rapid involvement of the muscular tube, and, if not speedily arrested, the peritoneal investment as well. The mucous membrane becomes swollen, edematous, and covered with a glutinous secretion; the plicæ or folds are thus brought together and the lumen of the tube closed. The abdominal end of the tube, having the thicker and more abundant folds, becomes closed first (this is a wise provision of nature to protect the patient from the effects of in-

flammatory products being poured out of the tube into the abdominal cavity). As the disease progresses other portions of the tube become closed, but there is no regularity about this process. The uterine end may not become occluded. If the case be not properly treated, or as it frequently happens is not recognized early, and the inflammatory process goes on, the muscular tube becomes involved, there is rapid cell infiltration, the edematous condition extends to the loose connective tissue and the peritoneal investment, adhesions are formed between the ovary and tube, the tube becomes elongated and thrown into tortuous loops, and by contiguity of tissue the inflammation extends to the ovaries, the broad ligament and entire pelvic peritoneum, and we have pelvic peritonitis.

At this point the enforced quiet of the patient, the anodynes and hot applications used for the relief of pain, may result in a subsidence of the acute symptoms, and it passes into a subacute or chronic inflammation, with ever and anon an acute exacerbation, namely, recurrent attacks. These acute recurrences nearly always involve the peritoneum. Each attack is attended with increased danger and followed by additional adhesion. This is the general outline of non-septic cases.

Now if the case have been one of septic origin, we have added to the above the formation of pus within the tube, which, as the process goes on, becomes distended; the walls of the tube become thin; the infection is communicated to the ovary and surrounding structures; ovarian abscesses; large or small pus accumulations in the interspaces of the loose connective tissue; these burrowing downward, backward, forward or upward, open into the vagina, rectum, bladder, or into the peritoneal cavity; or the wall of the tube may become so thinned as to rupture into the peritoneal

cavity ; or as a result of dense inflammatory adhesion the pus may remain encysted, the acute symptoms subside, and it become a case of chronic pyosalpinx.

The subacute form of salpingitis is most frequently found in cases of ovarian hyperemia, and is the result of the stasis in tubal veins caused by that in the ovarian. This form is never septic. Its pathology is simply that of hyperemia, and is chiefly confined to the mucous lining of the tubes.

The chronic form may be but a continuance of the subacute, in which case we have, from the long-continued pressure upon blood-vessels, the extension of the hyperemic condition to muscular layer, cell infiltration, followed by obliteration of vessels and atrophy of the muscular walls, until the tube becomes a mere fibrous cord (the ovary in these cases undergoes the same form of fibrous atrophy or cirrhosis), or by extension of the inflammation we have the peritoneum involved and adhesion formed.

Now if the inflammation have been non-septic and of sufficient severity to cause closure of the abdominal ostium, we have retention within the tube of the secretion poured out by its glands. The tube is gradually distended, its plicæ or folds are thinned or destroyed, the walls of the tube are stretched and thinned, and there arises the condition of hydrosalpinx. This has by some ingenious writers been said to be a later stage of pyosalpinx ; but until it can be conclusively shown that pus accumulations in other parts of the body undergo a transformation from a purulent to a serous fluid, I shall be loath to believe that such transformation takes place in the Fallopian tube. It certainly seems more consistent with our present knowledge of catarrhal inflammation to consider hydrosalpinx as the result of a non-septic and chronic inflammation of the mucous membrane and its glands, the muscular portion of the tube not being involved.

In the chronic septic cases we find those which in the beginning have not been of the severe or fulminating type. They have occurred as the result of gonorrhea, abortion, purulent endometritis, or infection by the use of unclean instruments. They may have been acute or not in the beginning. If acute, the pathology has been as described in acute salpingitis, but stopping short of ulceration into vagina, rectum, bladder or abdominal cavity, or having discharged by one of these routes, there has been death, or cessation of acute symptoms with gradual reformation of pus. The latter may be repeated many times, except where rupture occurs into the abdomen, before symptoms of general sepsis develop; and it occasionally happens in those that rupture into rectum or vagina, that a cure is effected, for the pus cavity contracts and ultimately heals.

There is another source of infection of these cases, which bacteriologists claim to be frequent, namely, the passage of germ-laden gases from the colon into a previously inflamed tube; and they cite the more frequent occurrence of pyosalpinx on left side in support of this theory. However seductive such a theory may seem, I believe the anatomical differences of the two sides will better explain the more frequent occurrence of pyosalpinx in the left tube, the most important being the absence of valves in the ovarian vein on left side, resulting in larger veins and more sluggish venous circulation, rendering inflammation more easily excited, and drainage from tube into the uterus less perfect on the left than on the right side.

The symptomatology of acute and subacute salpingitis is that of acute pelvic inflammation or hyperemia. In a typical case of acute salpingitis we have a chill of more or less pronounced type, symptomatic fever, increased pulse-rate, pain through pelvis aggravated by movement, dysuria with vesical and rectal tenesmus,

nausea, more or less pronounced, and generally constipation. These symptoms are as a rule preceded by a history of more or less profuse leucorrhea, and often all the subjective symptoms of endometritis. If now we attempt to make a digital examination we will be disappointed, for there will rarely be found one point about uterus, tubes or ovaries more tender than another. There may be apparent tumefaction at the sides of the uterus, but the whole region will be so tender that an examination without an anesthetic is unsatisfactory, and even with an anesthetic the results are so generally negative so far as isolating the part inflamed, that I do not believe we are justified in this useless and unnecessary manipulation until the acute stage shall have been passed or there is developed some evidence of septic inflammation.

In the subacute cases we find the usual history of ovarian hyperemia, with prolonged and profuse menstruation, dysmenorrhea, tenderness and pain over one or both ovaries and tubes. It is as a rule a bilateral affection, occurring in young and vigorous widows and the unmarried. Leucorrhea is frequently absent and rarely if ever profuse. On bimanual examination the tubes and ovaries are frequently found prolapsed; they are swollen, tender, and fixed by adhesions. If they are prolapsed, there is more or less rectal and vesical tenesmus, pain on defecation, and sometimes painful locomotion.

In chronic catarrhal salpingitis we have the history of either an acute attack, or that of subacute inflammation. In addition we have more profuse menstruation, metrorrhagia with gradually increasing pain during or a few days before menstruation, which is either partly or entirely relieved when the menstrual flow is well established. It is this condition which gives rise to the pain which has been so persistently ascribed to obstruc-

tion at some part of the cervical or uterine canal due to stenosis or flexion — a theory of premenstrual and menstrual pain not supported by either physiological or pathological facts. In other words, it is the inflammatory result of these conditions which causes the pain, and not the stenosis or flexion. Premenstrual pain is always, and menstrual pain is frequently, due to either tubal or ovarian inflammation or a combination of both. When salpingitis is the cause, it is to be explained in two ways: First, retention within the tube of the secretion of its glands, and the spasmodic contraction of its muscular walls in an effort to expel it; second, extension of the congestion and edema to the mesosalpinx and ovary. As soon as the menstrual flow is established, this congestion is relieved, the swelling of the tubal mucous membrane is relieved, the pent-up secretions are permitted to escape, the spasmodic contraction of the tube ceases, and the pain disappears.

If these cases are not promptly relieved, the condition grows gradually worse, the peritoneal coat is involved, adhesions form, and the patient becomes to a less or greater degree an invalid. The vesical and rectal tenesmus increase, the menstrual pain gradually begins earlier each month until the premenstrual pain becomes intermenstrual pain, and in time she is not free from pain at any time. There is soreness and a feeling of fullness and weight through the pelvis, defecation is painful, the bowels are constipated as a rule. An examination reveals a condition varying much. In some cases we may find that we can outline with some degree of exactness the thickened, indurated and tender tubes, but more frequently we find the uterus more or less fixed and tender, the sides of the pelvis occupied by tender masses, immovable and more or less indurated, poorly defined, with no fluctuation. In fact, the lateral portions of the pelvis, through the vaginal vault, feel very much as if they

were filled with clay or some equally unyielding substance. Keith calls it "the plaster of Paris feeling."

If we have a chronic inflammation of a septic or suppurative character, the condition is much the same, except there is a history of gonorrhea, abortion, labor followed by slow convalescence or maybe puerperal fever, or shortly after confinement she has had "an attack of malarial fever"(?), or she may tell us that about a week or ten days after confinement she had typhoid fever and has never been well since; or she may give a history of profuse leucorrhea, for which she was using vaginal injections, and after using an injection she had inflammation of the bowels and has suffered ever since. Examination reveals on either side of the uterus, or if only on one side it will usually be the left, a fairly well-defined mass which extends off to the sides of the pelvis; but instead of the hard indurated feeling noted in chronic non-suppurative salpingitis, we find a doughy mass which is non-elastic, rarely fluctuating; or we may find instead of a mass on one or both sides, a large irregular mass behind the uterus, and so closely connected with it as to make it appear a part of the uterus.

The periodical discharge of a mucopurulent secretion, with a constant mucopurulent leucorrhea, has been considered by some writers as almost pathognomonic of pyosalpinx when associated with enlarged tubes; but it is only an evidence of the coëxistent purulent endometritis, and may be present when there is no tumefaction or other evidence of tubal inflammation.

Tubercular salpingitis is of more frequent occurrence than has been generally supposed. Its pathology is that of tuberculosis in any other organ except that the constitutional disturbance is not so marked, in fact at times there seems to be an entire absence of such constitutional effects. And yet, I believe the tendency to develop peritonitis is greater in tubercular cases than in the

other forms. The muscular portion of the tube is chiefly involved ; it is much thickened, and studded with tubercular deposits giving the tube a nodular appearance ; the mesosalpinx will be found adherent, congested, and containing the same tubercular deposits ; the loose connective tissue between the muscular and peritoneal portions of the tube is, as a rule, diminished in quantity or destroyed entirely, and the mesosalpinx firmly adherent.

The diagnosis of tubercular disease of the tubes must rest chiefly upon three factors : First, amenorrhea ; second, the age and moral character of the patient (it occurring in the vast majority of cases in young girls and chaste young women); third, the nodular condition of the tube.

It is a doubtful question whether tubercular disease of the tubes ever occurs as a primary disease, and still more doubtful whether when secondary it occurs by infection through the vagina and uterus, or from contact with tubercular ovaries, or whether it is the local manifestation of a general disease. There are cases in which the disease seems to be limited to the tubes and ovaries ; in such cases removal of tubes and ovaries effects a cure. I have not, however, seen any case where the tube was clearly tubercular and the ovary not. This may not be construed into positive evidence that when one is so infected the other also must be, for we must remember that it is the pain caused by peritoneal adhesions or an attack of pelvic peritonitis that usually leads to the discovery of the tubal trouble. In other cases which seem to be limited to the tubes and ovaries, operation does not cure, but the patient goes from bad to worse, and ultimately dies of general tuberculosis. One case operated upon less than a year ago in which at the time of operation there was not any evidence of the disease in any other organ, and in which the convalescence was the most rapid and uneventful I ever saw.

has since developed pulmonary consumption. So that the importance of early diagnosis and operation can not be overestimated.

TREATMENT.

There is no disease of the pelvic or abdominal organs about which greater extremes of treatment have been taught than that of salpingitis. The explanation can only be that the pathology of the disease in its different forms has been misinterpreted. One tells us he has seen massive pus-tubes cured and the patient restored to perfect health without the intervention of surgery. Another, equally high in the councils of his profession, tells us that *the only* safety, even in acute non-septic cases, lies in opening the abdomen and removing everything inflamed; and if we should be so unfortunate as to find pus in the tubes or ovaries we must remove, not only both tubes and ovaries, but the uterus as well; and they argue that after tubes and ovaries are removed there is no further use for the uterus. These two extremes are alike dangerous. There are cases of salpingitis which can be certainly, simply and readily cured by medical treatment. To operate in such cases can but bring censure and just condemnation. There are other cases in which to delay operation or to tamper with local or medical treatment is to fritter away the patient's life. The advocates of such extreme measures as removal of the uterus in every case of double pyosalpinx have done more to cause thinking men in general practice to lose their faith in abdominal surgery than any other one thing. That there are cases in which such a procedure is advisable cannot be denied; but they are in the minority. I wish to be understood when I say that hysterectomy in connection with pyosalpinx is never justifiable except there be some decided pathological condition of the uterus, such as abscesses within its

walls, fibroma, or undoubted tubercular deposits. In the cases of tubercular disease I am very doubtful of its utility.

I can not expect to formulate rules of treatment which will be adopted by all gynecologists, but for my own practice I adhere rigidly to the following:

1. Acute salpingitis should never be operated upon except there be a history of a septic origin or symptoms of septic conditions arise. In those cases following abortion or labor, septic infection is very likely to occur, and we should be watchful to see the first evidence.

2. Subacute salpingitis is curable without operation, hence should be so treated.

3. Acute septic salpingitis is uniformly dangerous, and often rapidly fatal, and should always be removed by operation if the condition of the patient be such that she has a reasonable prospect of recovery.

4. Chronic salpingitis with adhesions is hopelessly incurable by any other means than removal, hence the tubes and ovaries should be removed.

5. Chronic suppurative salpingitis should always be removed.

6. Tubercular salpingitis if limited (*i. e.*, if there be no evidence of involvement of other organs or of general constitutional infection) should be removed.

Personally, in all these operations I prefer the abdominal route, as I believe more thorough work can be done from above than is possible through the vagina. In an experience of over ten years I have never had but one case in which a ventral hernia followed an abdominal section, and that was in a patient who would not wear her belt. In deciding the method of operating, that method or route should always be chosen which the experience of the operator has shown to be best adapted to his personality.

DISCUSSION.

DR. HUMISTON:

This is certainly a very valuable paper and one full of useful points to the general practitioner. I believe the papers read here by the specialists should be of such a practical nature that the general practitioner can use them in his daily work. Salpingitis is a very frequent disease; it is much more frequent than is recognized. But I cannot agree with the Doctor that abortion causes more cases of salpingitis than does gonorrhea. If I practiced in the country, perhaps I would find that true, but in the city I find more cases due to gonorrhea. Many cases are due to old cases of gonorrhea. A man who has a chronic gonorrhea, which has existed a long time, bothers him so little he believes himself well and finally marries, and the wife soon complains of pain on micturition, some vaginal discharge, and fever. She consults the family physician. Now this is the time when the nature of the trouble should be recognized, and proper treatment instituted. It should be treated very actively and persistently, and if so done early, I believe the complications of endometritis, salpingitis, and pelvic peritonitis with adhesions and suppuration may be avoided. But you will not succeed unless it is taken early. You can succeed when it is limited to the uterine cavity, by curetting and gauze packing. Abortion is a very frequent cause of salpingitis. The retention products of conception will at times take on septic action, and a chill and salpingitis and frequently pelvic peritonitis will follow. Salpingitis and ovaritis after labor at term does occur, but not so frequently as after abortion and gonorrhea. I had a case recently in which we undoubtedly had a streptococcus infection of this character.

The physician attended his wife, and had never before had a case of puerperal fever. I found she had had a normal labor with a slight laceration of the cervix. It seems the day of the labor the physician had opened an infected and suppurating gland in another patient, before attending his wife. The third day she had a marked chill, followed by a high fever. Several consultants were called, and they all said she was septic.

After six weeks I found a salpingitis and double ovarian abscess.

Now, as to the treatment of these cases. Of course, something must be done immediately and thoroughly. I am in the habit of treating gonorrhea in women early. I put them in bed, thoroughly cleanse the vulva, vagina and cervix; and after thoroughly cleansing these parts with the green soap and bichloride solution, I apply nitrate of silver, 5 per cent. or 10 per cent. solution. I then separate the vaginal surfaces with iodoform gauze. If the walls of the vagina fall together you have moisture and heat to favor the multiplication of the germ colonies. If you treat a case in this way, and thoroughly cleanse and pack off the diseased surfaces, you can let it go 48 hours, then remove the gauze and make another application of the 5 per cent. solution and then repack it. Follow this by using the boracic acid douche for a few weeks, and I believe you can cure gonorrhea, and prevent its extension to other parts, which if it does will mean in the majority of cases a resort to serious operative measures. We have reduced the mortality to 10 per cent. or less. I believe early treatment will give results not to be attained in any other way.

DR. ENTREKIN:

In the first place, Mr. President, I believe the tubercular form is more common than is usually supposed. I base this upon the fact that in making an examination of about 120 cases, I found tuberculosis in about one-fifth of the cases examined. I believe the tubercle bacillus will be found in a larger number of cases than is generally supposed. And that being the case, I can understand how a great many of these cases will give us a tubercular salpingitis. I do not want to detain you only with my opinion in regard to this.

I want to say, further, I meet with a few cases in which pus formation continues until a tumor develops with very thick walls. I suppose that is the experience of all who have much to do with that class of cases. In the removal of the tubes, whether by the vaginal route or through the abdominal parietes, I wish now to say I believe the future of gynecology is the removal of the uterus where both tubes are affected. I do not believe

any gynecologist should remove the uterus when only one tube is diseased. But when both tubes are involved I believe in bringing down not only the tubes but the uterus also. What use, I ask, is the uterus if the tubes are removed? It has no physiological use in the body, and the only thing it could do would be to form the nucleus of malignant disease later in life. I believe, wherever practicable, it should be removed by the vaginal route.

DR. LAWRENCE:

Dr. Humiston seems not to have clearly understood my statement in reference to the cause of pyosalpinx. He says he can not agree with me in the opinion that gonorrhea causes fewer cases than does abortion.

I did not say that it does. What I did say was that I believe gonorrhea has been given *too much prominence* as a cause of pyosalpinx, and that I do not believe that 90 per cent. or more, as some writers have claimed, were due to this cause. I then stated that I believe *abortion* and unclean midwifery are responsible for a far larger number of cases than has usually been ascribed to that source.

As to the question of removal of the uterus in cases of double pyosalpinx, upon the theory that after the tubes and ovaries are removed there is no further use for the uterus, this I believe to be a most fallacious doctrine and a pernicious practice if generally adopted. There are cases in which there can be no doubt that such a procedure is advisable, but those cases are fortunately rare. The uterus in the majority of cases is not seriously affected and gives no further trouble after the pus-tubes are properly removed. I can not conceive how we can claim that any organ or part of the body has no function unless it be the vermiform appendix, and I believe it has recently been claimed that even that much-abused appendage has a part to play in the production of leucocytes. To remove the healthy uterus simply because the tubes contain pus, I believe to be no more sensible than it would be to remove the cæcum because the appendix contains pus, or the prostate gland in cases of suppurating testicle.

What do we do when we remove the uterus?

1st. We convert the convex or arched pelvic floor into a concave basin.

2d. We remove the center of the broad ligament, and thus remove the chief support of the abdominal viscera.

3d. We make a needlessly prolonged operation of one which should rarely require more than 35 to 45 minutes to complete, and in the majority of cases a skillful operator will complete in 30 minutes or less.

4th. The present convalescence may possibly be shortened, but the ultimate condition of the case is certainly less satisfactory in cases where the uterus has been removed.

I venture the statement, that less than 5 per cent. of all cases of double pyosalpinx in which the operation is limited to the removal of tubes and ovaries will ever develop trouble as a result of the uterus having been left. If this be true, the operation of hysterectomy in connection with removal of tubes for pus, unless there be some tangible pathological condition of uterus, becomes unjustifiable if not absolutely criminal.

SOME OBSERVATIONS OF MALARIAL ORGANISMS IN CLOSE CONNECTION WITH TYPHOID FEVER.

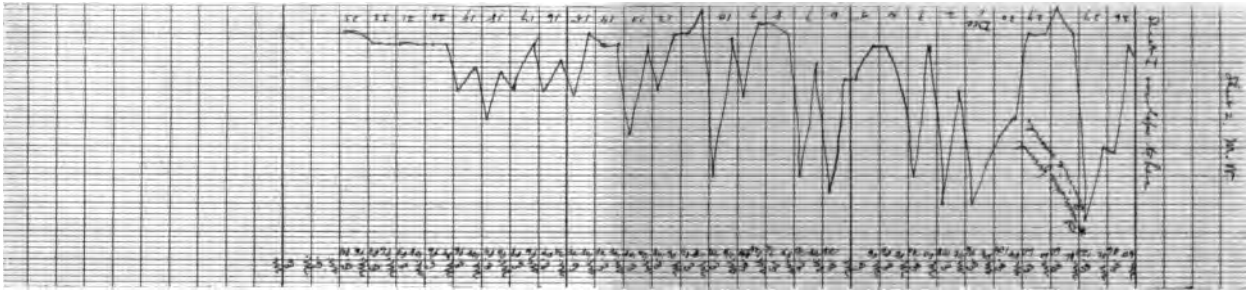
JOHN P. SAWYER, M. D., CLEVELAND.

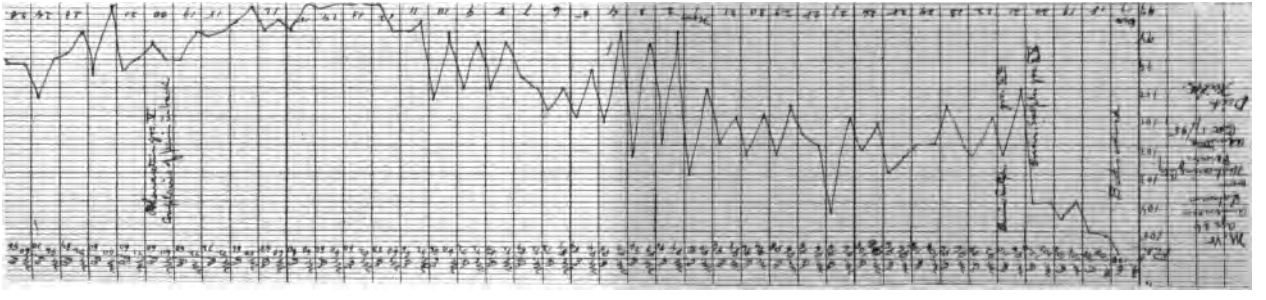
In 1888, in an article on the geographical distribution of typhoid fever in the United States, read before the Association of American Physicians, Dr. W. W. Johnston, of Washington, sums up very forcibly the opinion of representative men of the profession in a large part of the country, and states that as then employed "the term typhomalarial fever has no determined meaning, leads to confusion and misunderstanding, is a cover for uncertainty and ignorance, and should be discouraged and abandoned." At that time, of course, there had been no chance for professional opinion to be formed, based upon the recognition of the malarial parasite and the typhoid bacillus. Dr. Johnston ascertained that "the number who believe that typhoid fever is modified by malarial infection is nearly equaled by those who are sure there is no such combination—that the two diseases never unite their symptoms in one individual." Were it true that there is such a combination commonly found, we might reasonably expect by this time to have had a considerable number of positive observations. This, however, is not the case. On the contrary, in The Johns Hopkins Hospital Reports in 1894, Osler, on the basis

of a material of about 500 cases of malarial fever and 229 of typhoid, writes, "There was no case with the characters of the two diseases so blended that it seemed a compound or hybrid malady, nor was there an instance in which the manifestations of the two diseases were concurrent." He mentions three cases with a definite history of malaria within a few months. In each case, however, the malarial history preceded by weeks or months the development of typhoid fever. A fourth case admitted with malaria as shown by the examination of blood, was treated with quinine, and for six days the temperature was entirely normal. Then came a rapid rise of temperature which at first was thought to be malarial, but the case pursued a "perfectly normal course of typhoid fever, typical but of great severity."

In the *American Journal of Medical Sciences*, August, 1894, W. Gilman Thompson, of New York, reports three cases of typhoid fever, in the first of which abundant malarial organisms were found in the third and fourth weeks of a protracted case, clinically recognized as typhoid in view of the "distinct eruption, epistaxis, intestinal hemorrhages, and tympanites, in connection with all the other symptoms." Two other cases are presented in which abundant malarial organisms and pigment of the blood-corpuscles are reported five and eleven days respectively after the temperature of a typhoid had reached normal.

These are the only cases which I have been able to find in which malarial organisms were recognized in close connection with the typhoid fever. In none of these cases were typhoid bacilli recognized, nor in the cases which I have to present was any attempt made to determine their presence. With the aid of the procedure recently suggested by Elsner, this would be a more simple and certain matter than has been heretofore possible.

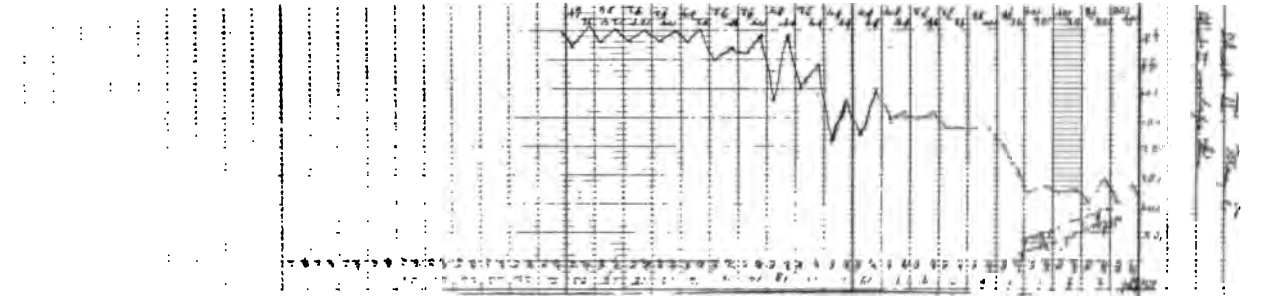


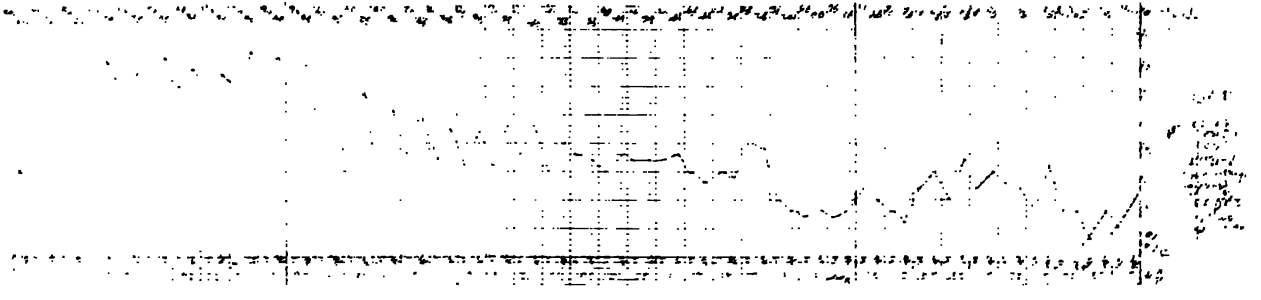


CASE I.—N. W., age 25, a laborer from Pennsylvania, was admitted to the Charity Hospital October 17th. Has always been well. Feels very hot, has had a chill this morning, no vomiting, no headache, no pain in limbs. There is a markedly coated tongue, the papillæ swollen, with a thick brown fur, red-edged; the conjunctivæ slightly icteric. There has been a slight constipation, there is present some tympany, some tenderness over the right iliac region, slight gurgling on pressure: there is a noticeable enlargement of the spleen, the temperature is 103.8°, pulse 108, dicrotic. Examination of heart and lungs indicates only a slight bronchial catarrh, corresponding with which the patient has a slight cough. The diazo-reaction is very pronounced. This evening the temperature rose to 105.8°. Cold baths were promptly ordered, and while their effect in the reduction of temperature was obtained it did not persist, and the temperature almost continuously ranged above 104° until the 20th, when the condition of the nervous system seemed to be so unfavorably affected by the persistent high temperature and the pulse seemed to be growing weaker, that quinine was ordered, twenty grains at night. There was a prompt fall of temperature to 100°, rising only to 102.4° at evening. A second dose was given, and thereafter the temperature continued to present the typical appearance of a mild case of typhoid, as exhibited in the accompanying chart. The urine in the second week became albuminous, with granular casts. On the twenty-fourth day the temperature reached normal and remained at normal or below for eight days, when in the evening it began to rise slightly until the 26th of November, when it rose to 102.2°, the 27th rising to 104.6°. An examination of the blood showed malarial plasmodia in great numbers. The segmentation of the parasites could be observed, their escape into the plasma, and their entrance and in-

vasion into other corpuscles. It is very unfortunate that the blood was not examined when the patient first came in, but the clinical picture of typhoid was so complete that the possibility of malarial infection also was not entertained. The normal course of the typhoid fever was passed through, and in the period of convalescence the characteristic phenomena of malarial infection made their appearance and persisted stubbornly. In this connection it is interesting to note the diminished resistance of the patient after the typhoid fever, as an apparent factor in explaining the persistence of the malarial invasion.

CASE II.—Mary T., age 23, Canadian, admitted to Charity Hospital October 22d. Two days before this she went to bed sick, having been feeling badly for a week, complaining of intense headache and backache. She was seen by Dr. J. E. Cook and sent to the hospital as a typhoid case. On admittance her tongue was moist, coated with a thick fur, brown posteriorly, tremulous; there was a slight gurgling in the right iliac region, slight tympany, enlarged spleen, isolated roseola spots, heart normal, slight catarrhal in the lung, and the diazo-reaction. Her temperature on admittance was 103.8°, rising to 105° that evening, and in spite of the free use of baths sometimes as low as 64° F. the temperature persisted, with development of stupor and acceleration of heart-beat. Quinine was ordered in 20 and 30 grain doses for each night through the succeeding week in connection with the baths. The temperature ranged between 103° and 104.8°; then sinking to lower levels it assumed the typical appearance of a mild typhoid case, as is seen in the accompanying charts. After a course of five weeks, while running between 99° and 100°, it on the 28th of November began to rise steadily through a period of three days, ranging at 104° and 103.5° for four days, when it slowly and steadily sank without





typical remissions through the succeeding week, gradually in the third week of the new development falling to normal. During this time the examination of the blood on the 2d of December showed the intracellular form of the malarial parasite, the pigment bodies within the corpuscles being seen with great distinctness. Segmentation and extracellular forms were not seen.

It is noticeable that the general phenomena during this period of malarial invasion were not those of a relapse of the typhoid fever. There was little or no tympanites, no diarrheas, no eruption of spots, but it is worth observing that from the 28th of November to the 16th of December, nineteen days were consumed before the temperature became normal. The malarial invasion which was recognized in this case occurred before the temperature indicated by its return to normal the cessation of the typhoid process. It occupied a period of time such as is commonly seen in a relapse. The character of the temperature curve of this period is not in its earlier days that of a typical typhoid fever, but in its last week it approaches closely to the typical last week of typhoid. The same relative characteristics are seen in the early and late portions of the chart of the primary attack. The finding of the malarial parasite in the second period of the fever, and the close resemblance, on a lesser scale to be sure, to the high temperature maintained during the primary attack, render our regrets all the greater that the blood was not examined in the first few days before quinine was freely given, and the course of the temperature approached more nearly the typical typhoid character. That this case was one of typhoid fever there can be no reasonable doubt, or else we have no grounds on which to trust our diagnosis on clinical observation. But in this case the patient had just arrived in Cleveland from Wallacetown, Canada, where she had been for three weeks while a typhoid

epidemic was prevailing, her father dying from the fever, and another case sick in the house. This history gives additional credence to the diagnosis of typhoid, if it be needed.

In neither case could the patient give any history of preceding malarial seizure.

This second case particularly may I think be fairly called typhoid with malaria concurrent. Intercurrent might better describe the relations between the typhoid and malarial elements in all these cases. They furnish reason for emphasizing the interest and the advantage of blood examinations early in the course of every case of suspected typhoid fever.

Clinically, the advantage gained by the exhibition of quinine in this case was very marked—the chart necessarily failing to express all the evidences of improvement which seemed to follow its use. And in cases where the malarial parasite can be recognized, or where there is clear history of previous malarial infection, they fairly suggest the advantage of giving quinine to control high temperature if it exists in such cases.

PELVIC HEMATOCELE AND HEMATOMA.

CHARLES N. SMITH, M. D., TOLEDO.

While it may not be desirable to so dignify a phenomenon occurring in the progress of a disease as to select it for the subject of a medical paper, still I have done so, desiring to consider the conditions causing hemorrhage within the pelvis largely from the standpoint of the hemorrhage itself.

Considerable confusion still exists regarding the nomenclature of intrapelvic hemorrhage. I trust that I may not worse confound such confusion.

Hemorrhage within the pelvis must be either intraperitoneal or extraperitoneal. The terms intraperitoneal hematocele and extraperitoneal hematocele have been, and are still to a limited extent, employed to distinguish these two forms of intrapelvic hemorrhage. By almost common consent and usage the term extraperitoneal hematocele has been abandoned and the term pelvic hematoma employed instead, while the term hematocele has been reserved for application to hemorrhage occurring within the peritoneum. The employment of these two terms in contradistinction has done much to clear away the confusion concerning intrapelvic hemorrhage.

Intraperitoneal hemorrhage is observed clinically in two forms—circumscribed and free—and while the

term hematocele, meaning a blood tumor, is commonly applied to both forms, it is correctly applicable only to circumscribed hemorrhage. Not desiring, however, to coin new terms, I will speak of both free and circumscribed intraperitoneal hemorrhage as pelvic hematocele and of extraperitoneal hemorrhage as pelvic hematoma. Every case of circumscribed intraperitoneal hemorrhage is primarily free, except in those comparatively rare cases where an antecedent pelvic peritonitis has resulted in the formation of adhesions within which hemorrhage secondarily occurs. A free intraperitoneal hemorrhage becomes circumscribed by a plastic peritonitis agglutinating the coils of intestines, the omentum, uterus, and parietal peritoneum. If the hematocele, so circumscribed, remains undisturbed for a sufficient time it becomes completely surrounded by an adventitious wall of considerable density and thickness. So long as the effused blood remains in contact with the healthy, or even slightly altered, peritoneum of the adherent viscera, absorption of the fluid elements of the blood will continue until but a firm clot remains; but in event of the formation of an adventitious membrane, lining the cavity of the hematocele with a non-absorptive surface, absorption practically ceases. At what time in the course of a circumscribed hematocele this adventitious membrane may form I am not able to say. Much will depend upon the condition of the peritoneum at the time the hemorrhage occurs and upon the degree of peritoneal irritation produced by the effused blood. I have seen a thin and but partially developed membrane in a case twenty-three days after the occurrence of hemorrhage, while in another case operated upon forty-two days after hemorrhage the membrane varied in thickness from one-eighth to one-fourth of an inch.

An understanding of the formation and progress of pelvic hematocele and hematoma must be based upon a

knowledge of the phenomena attendant upon the course of ectopic gestation. While intrapelvic hemorrhage may, without question, result from conditions apart from the extrusion, complete or incomplete, of an ectopic ovum, either by rupture of, or abortion from, a Fallopian tube, still, other causes than the latter must be considered as but rarely operative.

All of the older writers and, it is to be regretted, a few of the present day attempt to explain the occurrence of intraperitoneal hemorrhage in many cases by supposing a reflux of menstrual blood through the tube. Some color of truth is given to this theory by the fact that coincident with the formation of the hematocele occurs a bloody flow from the uterus. This uterine hemorrhage occurring at or near a menstrual period is erroneously considered a true menstruation. Numbers of the cases of hematocele so occurring and *seemingly* so explained have been subjected to operation for evacuation of the hematocele, and the observers have been surprised at the firmness of one of the clots, or at the widely patent ostium and the collapsed condition of a tube which had evidently been considerably distended, or at a firm clot partially protruding from the fimbriated ostium of the tube, or at a rounded enlargement entirely within the tube. Some of these have been interpreted aright as cases of complete or incomplete tubal abortion, but in many instances the real condition has been overlooked and a reflux of menstrual blood supposed to be the cause of the hemorrhage. I believe that in all such cases a microscopical examination will demonstrate the presence of chorionic villi, an absolute proof of fetal development, rendering positive the diagnosis of ectopic gestation.

The uterine hemorrhage which may occur at or about a regular menstrual period, and is concurrent with the formation of the hematocele, is not a true menstruation

but a phenomenon associated with the shedding of the uterine decidua, which invariably forms in cases of ectopic gestation. Rather than being the cause of the hematocele, the uterine hemorrhage, like the hematocele, is caused by a disturbance in the progress of the ectopic gestation. I cannot accept the view, still held by many, of a reflux of menstrual blood into the peritoneal cavity causing pelvic hematocele.

Tubal abortion is, in my estimation, a far more frequent event than is ordinarily supposed. The position of an ectopic ovum in the very early weeks, that is, prior to the formation of the placenta, is most precarious. If the ovum, especially if situated in the outer third of the tube, becomes dislodged from any cause during these early weeks, its extrusion from the tube by abortion through the unclosed abdominal ostium is far more probable than is its escape through a rupture in the tube wall. The closure of the tubal ostium is not ordinarily completed until the eighth week of gestation, and the development of the ovum in the outer third of the tube not only materially interferes with this closure but even tends to enlarge the opening by distending the tube.

In tubal as in uterine abortion the process may be either complete or incomplete. When the abortion, in the very early weeks, is complete, the hemorrhage should cease and not recur. On the other hand, when the separation of the ovum has been but partially accomplished, hemorrhage, as in incomplete uterine abortion, is prone to either continue or recur. The ultimate termination, in an uncertain number of these cases, be the abortion complete or incomplete, is by absorption of the blood and ovum, with return of health to the patient. Convalescence is, however, frequently prolonged through months or years, and is marked by many stormy and dangerous periods. At best, a dis-

eased tube and many dense adhesions between pelvic and abdominal organs are left to menace the woman throughout the remainder of her life. For the immediate, as well as the ultimate, comfort and safety of the patient, operation should be instituted in all cases of tubal abortion accompanied by appreciable hemorrhage, be it circumscribed or free, recurrent or non-recurrent.

Tubal abortion, with sudden free hemorrhage, cannot be differentiated from intraperitoneal rupture until the abdomen has been opened and the tube examined. The earlier the abortion takes place the less will be the amount of hemorrhage, provided the abortion be complete. The hemorrhage and consequent formation of the hematocele in early abortion will be *gradual*.

When intraperitoneal hemorrhage from rupture of a pregnant tube is diagnosed, immediate preparation for operation must be made. This must be followed in all cases of severe hemorrhage by the immediate performance of abdominal section. The rule has been largely adopted of postponing operation until recovery from shock has occurred. In the strict observance of this rule many a life has been lost which might have been saved by an immediate operation during shock. If we but consider the cause of the shock we will see the fallacy of the above rule. Shock in these cases means hemorrhage and hemorrhage alone. To wait for recovery from shock may be to wait for the patient to die. Nature arrests the hemorrhage when the heart but slightly feels the stimulus of the blood within its cavities. How much more surely, safely and quickly can the surgeon arrest the hemorrhage by his timely applied ligature. I would urge the necessity and practicability of immediate operation regardless of the degree of existing shock. Every moment of delay may mean increased hemorrhage, more profound shock, and a rapid approach of death. I grant that the hemorrhage,

even when severe, with the patient's life in greatest jeopardy, may cease, and the patient rally from shock. On the other hand, this recovery from shock may not occur, or occurring, be followed, at a greater or less interval, by recurring and still more severe hemorrhage, with death of the patient before operation can possibly be performed. It is the treacherous uncertainties which surround these cases that should prompt us to refuse to be tricked into a false sense of security and a policy of delay.

In view of the almost miraculous recoveries which have followed operation in patients practically dying from hemorrhage, it is questionable if a surgeon is justified in refusing operation in any case of intraperitoneal hemorrhage while life still exists. It requires an almost incredibly short time to open the abdomen, and to grasp and secure by snap forceps the bleeding structures. Hemorrhage is thus arrested and an opportunity given to combat its effects. The heart's action must be maintained by stimulation. While the hypodermatic injection of heart-stimulants, notably strychnine, should be freely employed, the greatest stimulus to the heart is the distention of its cavities by blood or a fluid of similar density. To produce and maintain this stimulation the infusion of normal salt solution is strongly indicated. In this connection I would call attention to an error of no mean importance, frequently made in employing the salt solution. In uncontrolled hemorrhage the heart's action becomes progressively less effective from inability of the heart to contract firmly when its cavities are but partially filled with blood. This may result in an arrest of hemorrhage from failure of the heart to propel the blood through the torn vessels. If, in such a case, hemorrhage having nearly or quite ceased, a quantity of salt solution is thrown into the vessels, increasing the quantity of circulating fluid, the heart cavities again

become filled with blood, stimulating it to renewed activity, and it at once proceeds to force more blood through the ruptured vessels.

Normal salt solution should never be infused into the circulation until the bleeding vessels have been secured. Exposure of the vessel into which the salt solution is to be thrown may be made by an assistant while the abdomen is being opened. Immediately after arresting hemorrhage from the ruptured tube, the salt solution may be employed. Removal of the tube and such cleansing of the peritoneal cavity as may be advisable can then be done.

While a smaller proportion of the cases of pelvic hematoma, as compared with pelvic hematocele, are the result of ectopic gestation, still the majority are so caused, the tube rupturing between the folds of the broad ligament. Operation is seldom, if ever, called for at the time of, or immediately following, extraperitoneal rupture of a pregnant tube. The hemorrhage takes place, not into a cavity, but among the tissues, which serve as limiting walls, preventing sudden, excessive hemorrhage. Such cases demand careful investigation to ascertain as accurately as possible, for future comparison, the extent of the hemorrhage and the relations and size of the resultant tumor. Examination must be subsequently instituted at short intervals to determine whether the size of the hematoma is increasing or diminishing. If repeated examinations demonstrate a progressive enlargement of the hematoma, a presumptive diagnosis of continued life and development of the fetus is warranted. If the fetus itself can be made out and its growth determined upon, the diagnosis becomes positive. In event of the continued life of the fetus, its removal by abdominal section should be accomplished without delay. Abdominal section for removal of the fetus before the completion of the fourth month of gestation, while

difficult and hazardous, cannot compare, either in difficulty or hazard, with the operation when performed after the fourth month. Owing to the growth of the placenta and the encroachment of the sac upon the surrounding structures, it then becomes one of the most trying and dangerous operations of surgery. Secondary intraperitoneal rupture may take place at any time, and if the placenta lies above the fetus and is torn or partially dislodged, a most profuse hemorrhage may occur, with death of the patient before measures for her relief can be adopted. To save the mother from both the extreme dangers of a late operation and the so frequently fatal results of a secondary intraperitoneal rupture, operation should be at once performed whenever the continued development of the child is determined upon.

DISCUSSION.

DR. GILLIAM:

While I agree in the main with what the Doctor has said about these effusions into the pelvic cavity, I must take some exception to his view that all of them are due to ectopic gestation. There is no doubt in the world but the great majority of these blood effusions are due to ectopic gestation, but I think we do a great injustice to certain parties when we claim all cases are due to such a cause. I have in my charge now a young lady, in whom I have the greatest confidence, and of whom I would not like to believe that is true, and I think it is an injustice to these women to claim every case is a case of ectopic gestation. There is likely to be hemorrhage from any place where blood-vessels exist. We know hemorrhage does take place in other places. We know we have hematoma and hematocele after operative procedure in the pelvic cavity. We know after the removal of the appendages, the tubes and ovaries, we often have hematoma, and after the removal of ovarian cysts we often have this condition of things. Wherever the blood goes, wherever there is brought an increased

pressure, there must of necessity occasionally be something of this kind. Of course, under the circumstances of gestation there is the circulatory condition favorable to the effusion of blood, and consequently we get the effusion of blood as the result of ectopic gestation.

In regard to treatment, I believe it is better to go right down and take up the blood-vessels. This is safer for the patient. As the Doctor says, it is very easy in the majority of cases, and it is speedily done, as a rule, and we had better give the patient the benefit of the doubt. Yet these cases come out very queerly sometimes.

In a case not long ago I advised operation, but the patient's friends fought against operation. Finally I went on a vacation and was telegraphed to come back, but when I came, the patient had backed out again. The abdomen seemed as large, from the accumulation of blood, for several weeks as a woman is in the sixth or seventh month of gestation, but finally that subsided and the patient is a well woman to-day.

In another case I know there was a large effusion of blood and the patient went on for several weeks. Finally suppuration took place, and when we operated we had to go through about two inches of a kind of fibrinous deposit before we came to the pus, and we let out I suppose from half a gallon to a gallon of pus. I believe in the majority of cases it is better to operate as soon as we find there is an effusion of blood. But I would take exception to the dictum that every case of intrapelvic hemorrhage is a case of ectopic gestation.

DR. ROSENWASSER:

The essayist has spoken of different conditions of hemorrhage. We have extraperitoneal and intraperitoneal hemorrhage. I have repeatedly advocated the division of these hemorrhages into two classes, one called "free hemorrhage," in which the hemorrhage is free in the abdominal cavity, not forming a tumor, and the other "circumscribed hemorrhage," forming a distinct tumor. The circumscribed hemorrhage may have been at first free, but has become palpable by the formation of false membranes and adhesions around the blood mass, thus shutting it off from the peritoneal

cavity. Clinically you may not be able to distinguish whether a circumscribed tumor is extra- or intraperitoneal, nor does it make any difference. To me the terms "free" and "circumscribed" hemorrhage seem preferable because simple. The terms hematoma and hematocele confuse the practitioner and those who have not made a specialty of this class of work. I am pleased to see the Doctor has to a certain extent adopted the terms I have advocated.

I cannot agree with the author in the sweeping assertion that every case of hematocele should be operated upon. I believe we can discriminate, and when we see a case that has gone on several weeks and there is no more trouble than at first, we may let it alone, as it will probably recover by rest. I am fully in accord with the Doctor in his advocacy of early operation in cases of free hemorrhage. I recall an instance a few months ago in which I saw the patient in partial collapse in the morning. I advocated immediate operation. The doctor in charge was not ready to operate at that time and said he would put it off until 2 o'clock. The attending physician did not heed my advice to operate at once, but at half past one I received word there had been a further hemorrhage, and the patient died.

DR. HALL:

I rise to discuss the discussion of the last speaker, especially in reference to the point of operation. I know, sir, our time is limited to a very few moments, and for that reason I shall not attempt to cover the other points in the paper. But I think this is a very dangerous doctrine to advocate and for the following reasons:

No man lives who can have a case before him of ruptured tubal pregnancy with circumscribed hemorrhage and can say positively the case is going to get well or is not going to get well. Such a patient is in a critical condition until she is thoroughly well. At any time she may be put in a condition beyond the control of the operator. From the circumscribed hemorrhage the patient is apt, from a renewed rupture, to have the cavity filled with blood before you can do anything. I have seen such

instances. When the diagnosis of tubal pregnancy is made, it is safest to make the operation. I will grant some of these patients do get well without operation, but we will save the larger percentage of the whole if we advise an early operation. Those who do get well without operation all have a slow convalescence, and many of them get well only by the skin of their teeth. Many of them die. I think, sir, if we had these cases always under the care of the operator, where he could put his finger on them in a minute or ten minutes, he might possibly let them go on.

Now I wish to speak in opposition to the statement by the essayist, that we should consider all the cases of pelvic hemorrhage as due to extra-uterine pregnancy. I think the statement by one of the speakers, that this would be an unjust criticism, is a very just criticism. If we have a clinical history of pregnancy to sustain the presence of the blood-clot, that will go a long ways in sustaining the diagnosis. To sustain the Doctor in a measure, I want to mention in this particular the fact that in my own small experience I have made three operations for ruptured tubal pregnancy on unmarried women.

DR. SMITH :

Some criticisms on my paper are unjust, from a misunderstanding of my position. As to the causes of intrapelvic hemorrhage I said :

An understanding of the formation and progress of pelvic hematocele and hematoma must be based upon a knowledge of the phenomena attendant upon the course of ectopic gestation. While intrapelvic hemorrhage may, without question, result from conditions apart from the extrusion, complete or incomplete, of an ectopic ovum, either by rupture of, or abortion from, a Fallopian tube, still, other causes than the latter must be considered as but rarely operative.

Dr. Rosenwasser prefers to classify these hemorrhages into free and circumscribed with no regard to their location. That is simple. However, we find that hemorrhage may be either intraperitoneal or extraperitoneal. If intraperitoneal, the treatment should be one thing ;

if extraperitoneal, it should be another. If the hemorrhage is extraperitoneal, the rule is to leave it alone.

Dr. Rosenwasser says he would operate in free hemorrhage. All intraperitoneal hemorrhage is primarily free, so the Doctor practically agrees with me.

THE TECHNIQUE OF ABDOMINAL HYSTERECTOMY.

J. F. BALDWIN, A. M., M. D., COLUMBUS.

Professor of Operative Gynecology, Ohio Medical University; Gynecologist to Protestant Hospital, etc.

I wish to describe, briefly, the method which I have been using during the last year and a half in performing abdominal hysterectomy. This method is the outcome of a careful study of the methods adopted by other operators, supplemented by a somewhat extensive personal experience.

In all operations, but most especially in those involving the abdominal cavity, any suggestion in technique which saves time constitutes a distinct advance. Furthermore, in abdominal work the securing of a smooth pelvic floor, with the slightest possible exposure of raw surface, is a most important desideratum. A recent writer, in reporting a series of abdominal cases, out of fifteen deaths reports three as due to obstruction of the bowel from adhesions to a pelvic stump.

After opening the abdomen in the usual way, by as free an incision as necessary, and drawing up the uterine mass, I seize the most accessible broad ligament just outside of the ovary, with a long clamp, the end of the clamp being directed obliquely toward the uterus; an

ordinary hemostatic forceps, or short clamp, is then attached to the upper border of the ligament next to the uterus, so as to prevent recurrent hemorrhage through the ovarian artery; with scissors the broad ligament is then severed along the clamp first applied; the other broad ligament is then usually treated in the same way; with scissors a peritoneal flap is then made in front, between the tips of the two clamps, and the bladder separated from the uterus; a similar flap is then made posteriorly, but this is usually shorter.

At this stage the uterus itself has not been interfered with, and the uterine arteries have not yet been reached. With the fingers the layers of the broad ligament are separated on each side, between the end of the clamp and the uterus, and the uterine artery seized with a long forceps. With long scissors curved on the flat (or, better still, with a Kelly's spud), the uterus is next detached at or just below the level of the internal os, being so detached as to give an anterior and posterior flap of uterine tissue. In case there is any difficulty in opening the broad ligament so as to reach the uterine artery before detaching the uterus itself, its seizure may be omitted until the artery spurts, as the uterus is being severed, when it is seized by an assistant with a long forceps. It is frequently difficult, or even impossible, to seize both arteries before getting the tumor out of the way. In that case, I cut across from one side and as I draw the mass upward, after separating the uterine tissue, the base of the broad ligament is grasped *en masse* below the point of separation, and the tumor then enucleated from below up, without hemorrhage. This is the method recommended by Kelly, and one which, in many cases, possesses many points of advantage.

The uterine mass has now been removed and the pelvis is empty. Hemorrhage is entirely controlled, except perhaps a little oozing from the cervical tissues.

FIG. 1.

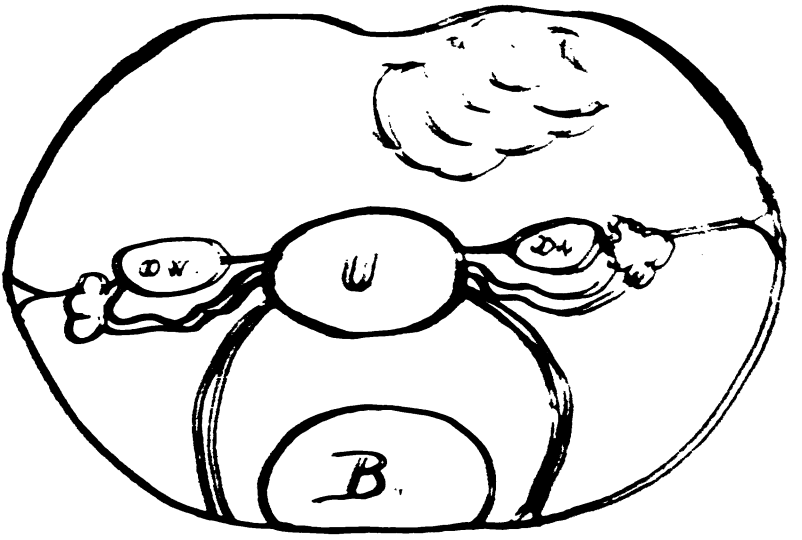


DIAGRAM OF PELVIS SEEN FROM ABOVE

B., bladder; Ow., ovary; R., rectum; U., uterus

FIG. 3.

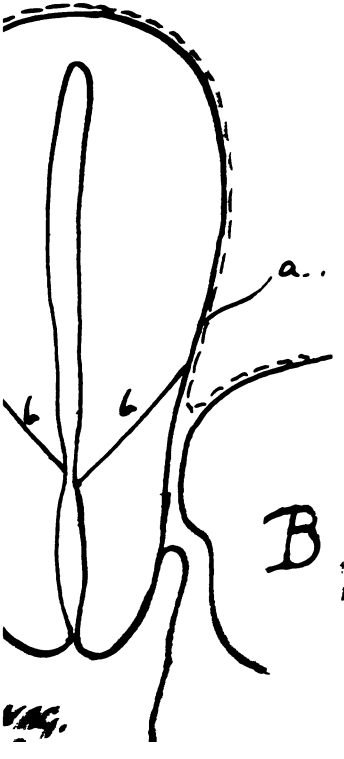


FIG. 4.

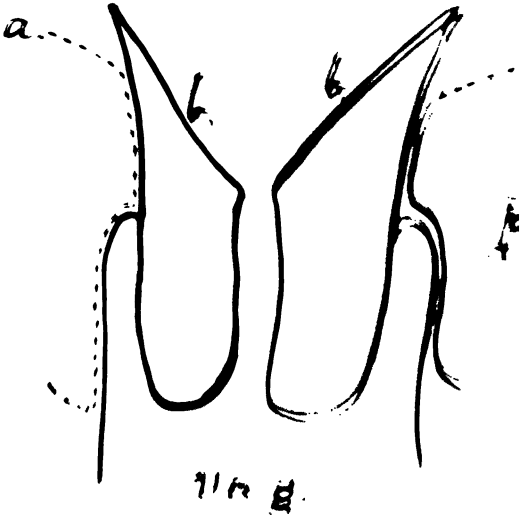


Fig. 3.

Figs. 3 and 4 [illegible]

The uterine artery upon each side is next separated from any surrounding tissue which may have been seized in the grasp of the forceps, and ligated as far back as possible, with rather fine silk, and the projecting end snipped off. The round ligament is then seized with a forceps next to the clamp, so as to prevent its retracting, and the clamp removed from the broad ligament. The ovarian artery is at once caught with forceps and drawn out from between the folds of the broad ligament, ligated with fine silk, and the projecting end cut off. The same is then done upon the opposite side. A long silver probe is now threaded with a strip of iodoform gauze, about one inch wide, passed through the cervical canal into the vagina, and seized by an assistant. The gauze is drawn through the cervix, except an inch or two which I hold in my fingers, and the probe detached. The end of the gauze which I have held in my fingers is now cut off just flush with the bottom of the wound. The passage of this gauze not only mechanically cleans the cervical canal, but also serves for drainage in case of any oozing.

With the kangaroo tendon the uterine flaps are now brought into apposition by a running suture. With the first insertion of this suture upon one side, the round ligament of that side is brought down and transfixed, so as to be implanted, when the suture is tied, between the flaps on that side. The same is done with the opposite round ligament just before completing the suture on that side. If the round ligaments are too long, they can be shortened so as to give the desired degree of support to the stump. Commencing, next, at the upper edge of one broad ligament stump, the peritoneal layers are inverted and with kangaroo tendon, or catgut, a continuous "over-and-over" suture is applied, running down the broad ligament, then across over the cervical stump, turning in the peritoneal flaps

as it proceeds, and up on the opposite side. This suture should be so inserted as to draw together snugly the tissues of the broad ligament, which being thus snugly apposed, unite so as to make excellent supports for the stump in addition to the round ligaments. The operation as thus completed leaves a perfectly smooth pelvic floor, with, at no point, the exposure of any raw surface for adhesions.

In case, owing to too extensive adhesions or other complications, drainage of the pelvis is desired, this is accomplished by opening Douglas's cul-de-sac and introducing a gauze drain. The abdomen is then closed in the usual way.

In case it is desirable to remove the entire uterus, the cervix, instead of being cut across, is enucleated in the usual way. In such a case I always introduce a pledget of gauze for drainage at the point of separation of the cervix, but close completely the floor of the pelvis, as above described.

During the last eighteen months, including a few cases operated on by my colleagues, Drs. Means and Reed, we have made, at the Protestant Hospital, over fifty of these operations with but two deaths; one of these deaths occurring from shock, in a case of complete removal for malignant disease, in which there was considerable hemorrhage in an already exsanguinated subject; the other from septic peritonitis in a case of double pyosalpinx with uterine infection, in an already septic subject.

The advantages of this method of operating are:

(1) Such a shutting off of the vagina as to reduce to a minimum danger of infection from that source.

(2) The ligature placed around the uterine artery is entirely outside of the uterine wound, and being of fine silk and buried in the tissues is much less likely to give any trouble.

FIG. 2.

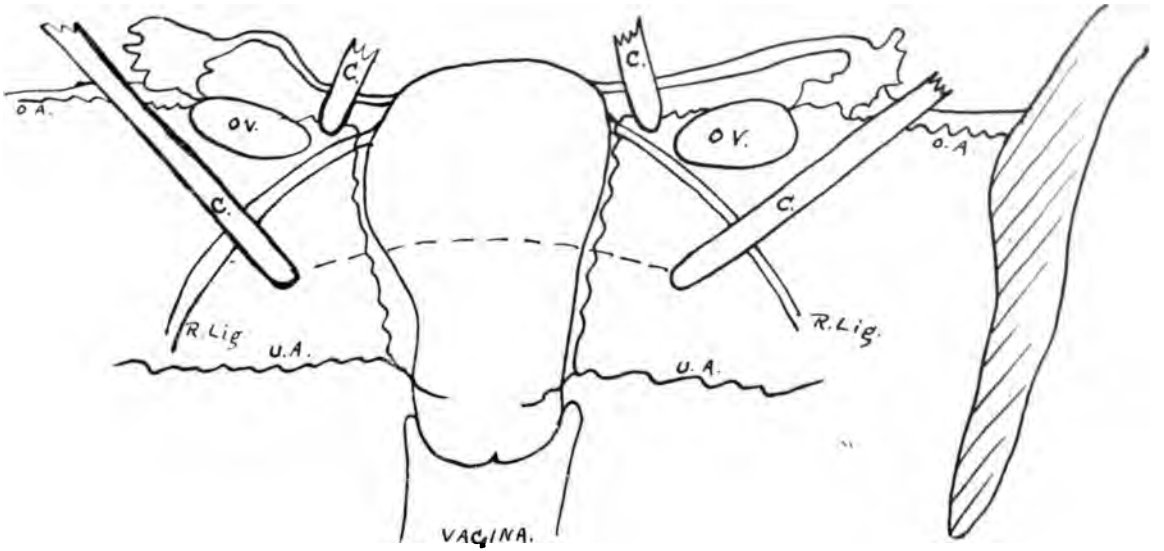


DIAGRAM OF OPERATION—FRONT VIEW.

C. C. C. C.—Clamps; O. A., ovarian artery; Ov., ovary; U. A., uterine artery. Broken line represents peritoneal flap.

(3) The snug closing of the cervical tissue prevents oozing.

(4) The smooth peritoneum in the floor of the pelvis, having no projecting stumps or raw surfaces, reduces to an absolute minimum the danger of intestinal adhesions.

(5) The implantation of the round ligaments prevents prolapse of cervical stump and vagina.

(6) The use of the clamps on the broad ligaments obviates hemorrhage, leaves the parts in better shape for the subsequent steps of the operation, and saves considerable time.

DISCUSSION.

DR. HALL :

I think the technique described by the essayist is very complete and apparently a satisfactory one. Except the lifting up, sustaining the vagina by attaching the round ligaments, it is practically the operation of the day in the technique. The operation as practiced by the the Doctor, of clamping all the arteries before tying, I grant is new. That, however, I consider might be an element of danger. I saw a very complete and beautiful operation made yesterday by the essayist, in which he carried out this technique, and it ought to—and I dare say it would—prevent any possibility of prolapse of the vagina, as he suggests. Whereas prolapse of the vagina does not take place very frequently after these operations, I have little doubt it will occur and does occur. I think the point made by the Doctor is a good one, and he should have due credit.

But, going back again to the clamping of the vessels, it occurs to me there is a possibility of danger from including the ureter in the clamp. That, of course, has not occurred to the Doctor, but I imagine it could occur. I have practiced in all these operations, tying the uterine artery without including very much if any tissue. After cutting down where he places the clamp, I tie the artery before it is cut, taking it up and placing a ligature around it. Not long ago, I remember, after doing it in this manner, and I tried to hug the side of

the uterus, for it was a case where the tumor extended out into the folds of the broad ligament, after I had placed the ligature and sent home the first knot, my assistant said: "You have more than the artery." I found on inspection I had the ureter as well as the artery in the ligature. I simply untied it and placed the ligature a little higher up along the side of the uterus and left the ureter out of the group of the ligature. So there is a possible danger. I do not think that it would occur very frequently, and possibly not at all, if the operator was always on his guard, as he should be, but oversights might occur. They do occur with all operators.

I have nothing to criticize in the technique of the essayist in any way, in this new method. I shall adopt it in all cases of relaxed vagina, as a precautionary measure. I cannot see, however, in those pus cases in which there is a raw surface behind Douglas's cul-de-sac, after he has amputated the cervix, why he should cut away in Douglas's sac as he did yesterday morning and not make a total extirpation. It occurs to me that in those cases where you want free and perfect drainage, and simply run the scissors around the cervix and get rid of the diseased cervix, the drainage would be free and satisfactory. That is the method I have adopted in my own work, and I have been pleased with it. And where I have opened Douglas's cul-de-sac, thinking I would mutilate my patient less, the results have not been so satisfactory.

DR. BALDWIN:

Of course, the uterine clamp is placed as close as possible to the cervix and after the tissues have been pushed back, so I do not think there would be any chance, except in the most extraordinary cases, of including the ureter. Before the ligature is placed, the uterine artery is separated from surrounding tissue so that even if the ureter were caught in the clamp it would not be included in the ligature. Where there is a fibroid mass projecting into the broad ligament, I prefer, as I said, to go down on the opposite side, cut across the uterus and then up so as to enucleate the fibroid from below upward, as is done by Kelly. When

I find it necessary to drain. I do so through Douglas's cul-de-sac. In women with relaxed tissues, if the cervix has been removed, in spite of whipping in the round ligaments I should fear prolapse. I prefer, therefore, to retain the cervix in those cases if possible, as it seems to constitute the keystone of the arch.

A CASE OF EXTENSIVE SKULL INJURY.

T. W. JACKSON, M. D., AKRON.

The case which I have the honor to report to you today is interesting, when studied from two distinct points of view. The surgical aspect of the case presents features sufficiently ususual to accord it record, even though they may not entitle it to the designation "remarkable." Time will not permit me to detail separately the features of the case of greatest interest surgically, so I shall simply submit to you the history of the case. The neurological aspect will be presented later.

Upon Wednesday, Jan. 23, 1895, at noon, I was sent by the Directors of the County Hospital four miles into the country to see a man reported to be suffering from some head injury. Accompanied by a member of the Board, I proceeded to the place, and there found the patient in bed, and conscious, but unable to converse with me. From several sources the following history was obtained:

D. P., American, aged 57, farmer by occupation, and ex-soldier. Lived with his two sons aged 14 and 16 respectively. At 12 o'clock noon, on Saturday, Jan. 19, he was found by one of his sons, lying unconscious upon the floor of his kitchen, bleeding from a wound of the scalp on the right side of the head. It was subsequently

learned that he had indulged freely in hard cider during the morning, and had quarreled with his sons; but the manner of his injury still remains a mystery. An irregular practitioner was summoned, and saw the man upon the afternoon of the 19th. The scalp wound was dressed in a crude fashion, the head bandaged and the patient placed in bed. Upon the 23d, notice was received by the Directors of the County Hospital, and, as stated above, I was given charge of the case.

When first seen by me the patient was conscious, but unable to state his case from inability to talk. It was evident, however, that he understood what was said to him. Examination revealed complete loss of power in the left arm and leg. Right side was apparently normal. There was no apparent paralysis of any of the facial muscles. The tissues about the right eye were greatly distended and discolored, and the eye itself was very red from extravasated blood. The left eye was apparently normal. The condition of the pupils was not noted. Examination of the head revealed a lacerated wound of the scalp one inch long about corresponding with a point on the temporal ridge of the right parietal bone. There was a perceptible depression on the right side, and crepitation was observed. Upon attempting to engage the patient in conversation, marked impairment of speech was clearly apparent, and to this I shall refer later in the paper.

Preparations for removal were made at once, and during the afternoon he was removed to the County Hospital, where I operated upon him at seven P. M. I was efficiently assisted by Dr. A. F. Sippy throughout the operation, which was performed by lamplight, and lasted three-quarters of an hour. After shaving the entire scalp and disinfecting thoroughly in the usual manner, a large horseshoe-shaped incision extending from a point one and a half inches back of the external

angular process upward and backwards, and terminating one inch above the ear, was made, and the flap turned back.

Later a transverse incision was made from about the middle point of the original flap. Upon reflecting the flap the most extensive skull fracture I have ever seen presented itself. An area of depressed and shattered bone, certainly not smaller than the palm of a good-sized hand, was exposed, and radiating from this depressed area were seen fissures running forwards, backwards, and transversely. The longest fissure was about parallel with the sagittal suture, and extended anteriorly into the orbit and posteriorly to the occiput. By actual measurement with a piece of ligature it was nine inches long. The depressed area was overhung and firmly held by the sounder bone, so that it was necessary to chisel away the edges in order to relieve the depressed portion. The mallet and chisel and rongeur biting forceps were used exclusively for this purpose, the trephine being inapplicable. Upon elevating the fragments, certain ones proved to be entirely denuded and free, and these, amounting in all to something over four square inches, were preserved and are herewith submitted for your inspection. Between the inner surface of the skull and the dura was seen a dried blood-clot which was gently softened and removed. The dura showed no signs of serious injury and was not opened. After elevating the fragments and determining that there was no puncture or loss of brain substance, the fissures into the sound bone were cautiously explored and freed from debris. Then the whole was freely irrigated with hot boiled water, and all hemorrhage checked. Strands of silk were placed in the wound to provide drainage, and the flap replaced. The scalp was then carefully sutured, a perfect approximation being secured. A dressing of

iodoform gauze and powdered boracic acid was then applied. At the end of four days the dressing was removed, and the wound found perfectly aseptic, and primary union well advanced. The drainage strands and a few of the stitches were removed, a fresh dressing applied, and at the end of six days all the sutures were removed and the wound was found to be entirely healed.

The temperature rose to 99⅘° F. the day succeeding the operation, but declined rapidly and never exceeded that point.

At no time was there a single drop of pus, nor any redness about the wound. The patient returned to his home upon the eighth day. The relief from all symptoms was immediate.

With the return to consciousness after the anesthesia, it was observed that the function of the left leg and arm was restored. The patient also spoke distinctly at all times after the operation, and the following day stood upon his feet and walked.

I last saw the patient in October, 1895, at which time he declared himself to be perfectly well, free from headache and without any disturbance of speech. The only perceptible evidence of his injury consisted in a slight impairment of gait, due to slight loss of power in the left leg, and the pulsating area on the head corresponding to the site of the removed bone.

Viewed from the standpoint of the neurologist and physiologist, an anomalous and apparently irreconcilable combination of symptoms is here presented for explanation. In this case we have the symptoms of motor aphasia and left hemiplegia due to and coincident with a depressed fracture of the right vault of the skull, with complete and immediate relief of all symptoms following operation.

In the first place, let us establish the fact of aphasia. Aphasia consists of disturbance of that part of the

speech mechanism located in the cerebral cortex, and consisting of receptive, perceptive and emissive centers. This is not the place for a discussion of the complicated subject of aphasia, but the statement of one or two pertinent points may be permitted.

So long ago as 1861, Broca, of Paris, announced the theory, since proven to the abundant satisfaction of all reasonable students, that the portion of the cerebrum diseased in motor aphasia is located in the third left frontal convolution. With the sole exception of the case of left-handed persons, in whom the emissive center is located in the corresponding convolution in the right hemisphere, the Broca convolution represents the motor speech center in man. There is no essential difference in aphasia due to disease of the Broca convolution and traumatic aphasia due to pressure upon the cortex at this point.

That there was disturbance of speech was apparent to all concerned. By the patient's own statement, obtained afterwards, he understood all that was said to him but was unable to utter the words he wished to. He stated the day after operation that he believed he must have bitten his tongue, it had seemed so stiff, but examination failed to reveal the slightest lesion.

In the minds of Dr. Sippy and myself there is no doubt that this man suffered from motor aphasia.

Inquiry of the patient's mother, his children and himself revealed the fact that he had never been left-handed.

After a careful and extended examination of the literature of aphasia I fail to find record of any case identical with or similar to the one just related. The literature of the subject is voluminous, and it was quite beyond my power to obtain access to all the reported cases. I do not find in the Index Medicus reference to any such report. Anomalous cases are frequent, but I found none with the combination of symptoms described above.

I am in receipt of a letter from Dr. W. W. Keen, who has had a large experience with head injuries, and he has not encountered such a case, nor could he cite me any cases of right-sided traumatic aphasia. He suggests the possibility that a small clot, due to counter stroke, was formed in Broca's convolution on the left side,

Dr. F. X. Dercum, President of the American Neurological Society, and a man of wide experience, is unable to cite me an exactly similar case.

He suggests the possibility that the patient suffered from the *distance* effect of the blow, *i. e.*, that a hemorrhage occurred in the opposite or left third frontal convolution and that the blood was reabsorbed with the concomitant disappearance of the aphasia. He is strengthened in this view inasmuch as the aphasia was purely motor.

The only objection to be raised to this explanation, and perhaps not a very powerful one, is the fact that the aphasia disappeared immediately upon the relief of the pressure upon the right cerebral convolutions. This would hardly accord with the theory of reabsorption of the clot.

Without pursuing further the explanation of this anomalous condition, I submit the case to your consideration, and sincerely hope that some one present may suggest a more probable cause of the phenomenon.

DISCUSSION.

DR. KINSMAN :

This is an interesting case on account of the extent of the injury, gravity of the symptoms, and the prompt relief which followed the operation. How can we explain the sudden subsidence of the aphasia? How account for its occurrence when the lesion was on the right side of the head in a right-handed man?

There are many puzzles among these cases of traumatic neuroses, and we are far from being able to guess

their solution in all cases. I recall a case occurring under my observation. A man was struck over the left occipital region with a sand-bag. For forty-eight hours nothing is known of his whereabouts; at the end of that time he appeared at his father's house, after a journey of five hundred miles, supposed to have been made by cars. He was completely aphasic. He appeared to have lost all ideas of the use of things and the meaning of words. He did not show as much intelligence as my dog. There was no paralysis. This condition lasted seven months, when he gradually recovered. What caused this mental obnubilation and the aphasia? I don't suppose there was a clot of blood anywhere, but I have thought that by contre-coup the associational relations of the neurons had been destroyed. There was a condition little short of disorganization produced. Time restored the nervous elements and their functions.

In the case reported I suppose there was severe commotion of the nervous elements in the left hemisphere, in the speech center. The pressure by depressed bone and effused fluids was removed by the operation, and the dislocated elements at once assumed their normal relation. It seems improbable to me that a clot at or near the speech center would be absorbed so soon, or that its effects could be relieved by an operation so distant.

In Memoriam.

WILLIAM S. BATTLES, M. D.

Dr. Battles was born in White Hall Station, near Philadelphia, Pa., May 12, 1827. His father, Thos. S. Battles, moved to Wayne County, Ohio, when the doctor was a child of eight years. He remained on the farm until nineteen years of age, having had no educational advantages save that of the common school. He attended Hayesville Academy for a term of seventeen weeks, and then entered the office of Dr. T. H. Baker of Millbrook, Ohio, teaching school in the meantime. He entered the Starling Medical College, Columbus, in 1850, graduating in 1852. Returning to Millbrook, he formed a partnership with his preceptor, but spent the winter of 1853-54 in hospitals in New York, Philadelphia and Cleveland. Upon dissolving partnership with Dr. Baker, he went to Apple Creek, Ohio, where he remained but eight months. In December, 1855, he moved to Shreve, Ohio, where he pursued the practice of medicine and surgery up to the time of his death, excepting from 1865 to 1868, when he was engaged in banking at Ashland, Ohio. He leaves a wife and two children.

He was for a number of years Censor of the Columbus Medical College, a member of the American Medical Association, Ohio State Medical Society, Union Medical Association of Northeastern Ohio, North Central Ohio Medical Society, and Wayne County Medical Society, the last two societies of which he was ex-president.

Although a close student and ardent lover of his profession he was greatly interested in horticulture and agriculture.

Dr. Battles was gifted as a writer, and contributed throughout his career to medical journals many literary gems of prose and poetry. At the centennial anniversary of this Society held at Columbus last year, he was called upon to present the poem of the occasion, which appeared in last year's Transactions.

THOMAS JEFFERSON BARTON, A. M., M. D.

Dr. Barton was born in Wooster, O., April 15, 1848. He was educated in the public schools of that city and of Ashland, O., where his father subsequently moved, and completed the course of Washington and Jefferson's college at Washington, Pa., in 1869, receiving the degree of A. M. At the age of twenty-one years he was appointed superintendent of the public schools of Ashland, O., filling that position with much credit to himself for a number of years. His spare time was spent in studying medicine under Dr. H. P. Clark, then a practicing physician of that town. He continued his studies in Bellevue Hospital Medical College, New York City, taking the degree of M. D. in 1875.

A few months before his graduation he was united in marriage to Miss Kate J. Beer, of Ashland, who accompanied him to New York, remaining there until he completed his medical course. Returning to Ohio he located in Zanesville, in June, 1895.

On April 22, 1896, after a hard day's work, he was seized with what appeared to be an attack of acute indigestion. He took an emetic, free vomiting followed, after which he seemed to be relieved. In a few moments,

however, the nausea returned, accompanied by severe vomiting, and death ensued without a moment's warning, apoplexy in all probability being the immediate cause.

As a physician, none applied to him for his services but who were encouraged and helped. He listened attentively to the many wants of his patients; with his kindly manner he soothed many an aching heart, and by the power of his knowledge disease fled. Yet when the last call came to him he, too, was compelled to submit, and it found him as ready to respond as was his wont in life.

HENRY C. BEARD, M. D.

Dr. Beard died at his late residence in Lucasville, on Wednesday, August 21st, 1895. The deceased was born December 21st, 1839, near Middlebrook, Augusta Co., Virginia. He came to Ohio in October, 1859, when he began the study of medicine, taking his first course of lectures at the Medical College of Ohio during the session of 1860–61. In August, 1862, he enlisted as a private soldier in the 117th O. V. I. (later the 1st Ohio Heavy Artillery), was soon promoted to hospital steward and advanced to the rank of assistant surgeon to the 1st O. V. H. A., during the service of which the seeds of the malady which caused his demise were sown. He was mustered out with his regiment at Knoxville, Tenn., July 25th, 1865. In June, 1869, he graduated from the Cincinnati College of Medicine and Surgery. He located in Lucasville in 1879, and was actively engaged in the practice of medicine until his death.

Dr. Beard was an active member of the Hempstead Academy of Medicine and the Scioto County Medical

Society, having filled their various offices with honor, and acquired the highest esteem and sincere friendship of all with whom he was associated. He was also a member of the Ohio State Medical Society, Bailey Post, G. A. R., and Lucasville Lodge, No. 465, A. F. & A. M.

He was a kind husband and indulgent father. As a man he was esteemed and respected by all who knew him. As a physician he ranked at the top of his profession, and was noted for his sound judgment and the masterly manner in which he relieved suffering humanity of their ailments. Always ready to lend a helping hand to the needy and oppressed, without money and without price, in justice to him we can truthfully say that he will reap the reward bestowed upon the faithful who have passed to the great beyond from which none ever return.

The funeral service, under the auspices of the Lucasville Lodge, A. F. and A. M., was held at the M. E. Church, August 23d, at 2:30 P. M., and was the largest funeral ever witnessed here. Many were the eyes that were moistened by tears of sincerest sorrow, as all seemed to realize the great loss they had sustained by the death of this one, their earnest friend in many times of need.

C. G. COMEGYS, M. D.

Dr. Comegys died February 11, 1896. He was no ordinary man. For forty-eight years he has been a notable figure, not only in his profession, but as a citizen of pure life, of honest purposes, serving the public faithfully and with great ability in various positions. In all of his relations with his professional brethren he was a gentleman, moved by the spirit of doing unto others as he would have them do to him.

A man of gentle, liberal spirit, he was charitable and forgiving. He was, indeed, the friend of his profession, esteeming its object to prevent disease and to do good to all. He was the friend of young men, and by his words of encouragement and his example did much to aid them. Yes, he did much to elevate the tone of the profession in Cincinnati.

Dr. Comegys was a man of superior intellect. He fully exemplified the fact that the strong physician is one whose mind is not "cabined, cribbed or confined" by strictly technical and professional reading, but is enlarged by all collateral studies and observation. He very early achieved a prominent place as a practitioner. He was a sound counselor, a good clinician, a clear lecturer and teacher. He was the advocate of higher education for the people and for medical students. He did much by word and deed to further this great object.

He believed his profession in its ability to do good mentally, morally and physically, superior to any other. He often spoke of the power of the good, able physician.

A man of deep religious convictions, and yet charitable to all, he was dominated by the spirit of walking humbly and acting mercifully, serving Him whom he regarded as his Master and Saviour. He did not believe that it is all of life to live or all of death to die.

He belonged to the time when the general practitioner was not only the medical adviser, but the counselor and friend of his clients. There were giants in those days. Up to a few weeks before his death our departed friend showed the ability and superiority of the general practitioner.

He is an example for every young struggling man. His honesty, his high tone, his noble purpose, his usefulness, should impress his memory on all. Let us cherish it.

T. M. COOK, M. D.

Dr. Cook was one of twins born on September 3d, 1816, on the farm located two miles south of Mansfield, Richland County, Ohio. His early manhood was spent on the farm, teaching school in winters. At the age of 23 he married Mary L. Cole, daughter of Dr. Cyrus Cole, of Monroeville, Huron County, Ohio, making their home with his parents for a few years. Afterward removing to Monroeville he began the study of medicine with Dr. Cole, attending school and graduating in 1846 at Cleveland from the Western Reserve Medical College. He practiced his chosen profession at Monroeville until 1858, when he was elected a member of the Legislature from Huron County, serving two years. On returning, he resumed his practice, and in 1862 was mustered in surgeon of the 101st O. V. I., then rendezvoused at Monroeville. Mustered out with his regiment in June, 1865, he removed to Toledo, where he again resumed practice and remained until the summer of 1878, when he removed to Sandusky, where he has since resided and practiced medicine.

He was made a member of the examining board for pensions and served several years, and his services were dispensed with in July, 1893. Since that time his health became impaired, and he sought the climate of Oregon, returning therefrom one year ago in a very feeble condition, yet able to be about until in March, 1896, he died at the home of his son, Dr. Alta F. Cook, after confinement of one week, from uremia. He leaves a wife, two sons and a daughter to mourn his loss, with a host of friends among the veterans of the late war, with whom his warmest feelings were always in sympathy. He was a member of McMercer Post, G. A. R.; also a member of the Northern Ohio District Medical Society and the Erie County Medical Society.

JONATHAN MORRIS, M. D.

Dr. Morris was born in Morgan County, O., Dec. 1st, 1823, and died Dec. 26, 1895, at Ironton, O. He graduated from the Cleveland Medical College in 1847, and continued in active practice in this State until his death. He was surgeon of the 9th Reg. W. Va. Inft. during the war.

Dr. Morris was an exemplary physician, a man of sterling integrity, and perfection in professional courtesy. Many young doctors were aided in counsel by him, and he was always counted one of the best professional friends to a young practitioner. He was very popular and took great interest in public affairs, having held municipal offices and represented Lawrence Co. in the General Assembly. He was an active member of all medical societies, both State and national, having joined the State Society in 1853, and continued his membership until his death. He was a member of the G. A. R. and an active member of the Methodist Church. Universal regret was manifest throughout the city for the death of this good man, whose friends were legion.

JOSEPH PRICE, M. D.

The parents of the subject of this sketch were Pennsylvanians, who came to Marlboro Township, Stark County, Ohio, at an early day, where Dr. Joseph Price was born October 15, 1823, and reared to manhood. He encountered all the hardships of a semi-pioneer life, so that his educational advantages were only such as the surrounding country furnished. However, his energy and indomitable will always secured the best of what was spread before him. After reaching his majority he studied medicine, and graduated from the Starling Medical College, Columbus, Ohio, in the spring

of 1851. He located in Randolph, Portage County, O., in 1846, where he remained and practiced his profession for forty-nine years, the last ten, from infirm health, principally an office business. I met the Doctor first in 1847. He and his neighbors were following a slave-catcher, with the hope in some way of making a rescue. He impressed me as a man of indomitable will and courage to do what he thought right, and this characteristic remained during life. As a practitioner of medicine and surgery, he stood at the head of his profession, and would have been placed there by any community in which he might have located. The same might be said of him as a citizen. He was first among his fellows in every good work for the benefit of mankind. The resolutions of the Portage County Medical Society are expressions of the esteem in which he was held by the Society.

The Doctor died of typhoid fever, complicated with serious chronic disease, October 22, 1895, aged seventy-two years. A very useful man has gone to rest.

W. J. SCOTT, M. D.

Dr. W. J. Scott died at Cleveland May 5th, 1896, aged 74 years. He was born in Culpeper County, Virginia, January 25, 1822, and lived there during his childhood. The family settled in Knox County, Ohio, in 1835. He attended the country school until he was of age, when by working his way he secured an education at Kenyon College, Gambier, being graduated in 1848, after five years' work. At the time of his death, Dr. Scott was one of the oldest of the Kenyon alumni. For two years after graduation he was a tutor in the college, at the

same time studying for the practice of medicine with Dr. Homer L. Thrall, then one of the faculty of the college. The first course of lectures which he attended was in the winter of 1849-50, in the old Cleveland Medical College. Being a professor of chemistry and geology in Jefferson College, near Washington, Miss., he remained in the South until 1853, when he returned to Ohio, and graduated from the Starling Medical College, at Columbus, upon which he began practice in Franklin County, a little south of Columbus. There he married Miss Mary Stone, daughter of Nathan Stone, a prominent farmer of St. Johnsville, Vt., and she survives him.

When Charity Hospital Medical College was organized in Cleveland, in 1863, Dr. Scott was called to the chair of materia medica, and moved his family to the city in 1866. As a member of the faculty of Wooster University Medical College (the successor of the Charity Hospital Medical College), he was one of those who joined the Western Reserve Medical College in the attempt of 1880 to unite the two institutions. Ever since he was a member of the faculty, at the time of his death being emeritus professor of medicine and clinical medicine.

Dr. Scott was a member of many professional and other organizations. He was the first president of the modern Cleveland Medical Society, and was identified with nearly all of those that have been active in the city since the war. He was one of the presidents of the State Medical Society, and had been a member of the American Medical Association, the American Pharmaceutical Association, the Northeastern Ohio Medical Association, and various other medical and medico-legal societies in and out of Cleveland.

His connection with the charitable enterprises of the city was prominent, and he was one of those who brought into existence the Cleveland Associated Charities. As a member of the United States organization of Associ-

ated Charities he has made several delegate trips to conventions in various parts of the country. Since 1854 he has been a Mason. In the discussion of candidates for the office created by the recent law requiring the registration of physicians, the name of Dr. Scott was prominently mentioned. For nine years previous to 1890 Dr. Scott was a member of the Cleveland Board of Health.

KIMMELL BILL.

AN ACT TO REGULATE THE PRACTICE OF MEDICINE IN THE STATE OF OHIO.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That Section 4403, Revised Statutes of Ohio, be amended so as to read as follows:

SECTION 4403. Within thirty days after the passage of this act, the governor, by and with the advice and consent of the senate, shall appoint a state board of medical registration and examination, consisting of seven members, one to serve for one year, one for two years, one for three years, one for four years, one for five years, one for six years and one for seven years, and the successors of each for the term of seven years, who shall be physicians in good standing in their profession, representation to be given to schools of practice in the state as nearly as possible in proportion to their numerical strength in the state, but no one school to have a majority of the whole board. The board shall organize by electing a president and a treasurer, who shall be members of the board, and a secretary, who shall be a physician in good standing in his profession, each to serve for the term of one year. The treasurer shall give a bond in the sum of ten thousand dollars, with sureties approved by the board, for the faithful discharge of his duties. The secretary shall receive a salary of not exceeding fifteen hundred dollars per annum, to be fixed by the board, and his necessary expenses in performing

his official duties. The members of the board shall each receive ten dollars per day for the time actually employed in the discharge of their duties and their necessary expenses while engaged therein. The board shall have a common seal, and shall formulate rules to govern its action. Its president and secretary shall have the power to administer oaths. The board shall meet in Columbus on the first Tuesday of January, April, July and October of each year, and at such other times as the board may appoint. Five members shall constitute a quorum. The board shall keep a record of all its proceedings, and a register of all applicants for certificates, giving the name and location of the institution granting the applicant the degree of doctor of medicine or surgery, and also whether the applicant was rejected or a certificate granted. The books and register of the board shall be prima facie evidence of all matters recorded therein.

SECTION 2. That section 4403 of the Revised Statutes be further supplemented by supplementary sections 4403*c*, 4403*d*, 4403*e*, 4403*f*, and 4403*g*, as follows:

SECTION 4403*c*. No person shall practice medicine, surgery, or midwifery, in any of its branches, in this state, without first complying with the requirements of this act. If a graduate in medicine or surgery, he shall, either personally or by letter or proxy, present his diploma to the state board of medical registration and examination for verification. Accompanying such diploma the applicant shall file his affidavit, duly attested, stating that the applicant is the person named in the diploma and is the lawful possessor of the same, and giving his age and the time spent in the study of medicine. If the board shall find the diploma to be genuine, and from a legally chartered medical institution in good standing, as determined by the board, and the person named therein be the person holding and presenting the same, the

board shall issue its certificate to that effect, signed by its president and secretary; which, when left with the probate judge for record as hereinafter required, shall be conclusive evidence that its owner is entitled to practice medicine or surgery in this state.

If a legal practitioner of medicine under the laws of Ohio in force at the time of the passage of this act, but not a graduate of medicine or surgery, as above defined, he shall, either personally or by letter or proxy, furnish the board an affidavit, duly attested, stating the period during which and the places at which he has been engaged in the practice of medicine or surgery. If the board is satisfied from the affidavit and other information received, that the applicant was a legal practitioner of medicine in Ohio at the time of the passage of this act, it shall issue its certificate to that effect, which, when left with the probate judge for record, shall be conclusive evidence that its owner is entitled to practice medicine or surgery in this state.

If engaged in the practice of medicine in this state at the time of the passage of this act, but not a legal practitioner under the laws in force at such time, nor a graduate in medicine or surgery as above defined, he shall present himself before the board and submit to such examination as to his qualification for the practice of medicine or surgery as the board may require. If such applicant passes an examination satisfactory to the board, the board shall issue its certificate to that effect, which, when left with the probate judge for record, shall entitle the owner to practice medicine or surgery in Ohio for a period of one year next ensuing from the date thereof.

The board may refuse to grant a certificate to any person guilty of felony or gross immorality, or addicted to the liquor or drug habit to such a degree as to render him unfit to practice medicine or surgery; and may, after notice and hearing, revoke a certificate for like

cause. An appeal may be taken from the action of the board refusing to grant or revoking a certificate for such cause, to the governor and attorney-general, and the decision of which officers, either affirming or overruling the action of the state board, shall be final.

All persons engaged in the practice of medicine or surgery in this state at the time of the passage of this act may continue in such practice for a period of ninety days after this law takes effect in order to permit them to apply for and obtain the certificate above required.

An affirmative vote of not less than five members shall be required to authorize the issuance or revocation of a certificate. The fee for a certificate issued upon the verification of a diploma or to a legal practitioner as above defined, shall be five dollars. For the examination of an applicant, the fee shall be twenty-five dollars. In the latter case the fee shall not be returned in the event of a failure, but the applicant may, within a year after such failure, present himself and be examined again without the payment of an additional fee. All fees shall be paid in advance to the treasurer of the board and by him covered into the state treasury to the credit of a fund which is hereby appropriated for the use of the state board of registration and examination. The compensation and expenses of members and officers of the board, and all expenses proper and necessary in the opinion of the board to discharge its duties under and enforce the law, shall be paid out of said fund upon the warrant of the auditor of state issued upon the requisition signed by the president and secretary of the board.

SEC. 4403*d*. The person receiving a certificate to practice medicine or surgery under section 4403*c*, shall, before entering upon the practice, leave his certificate with the probate judge of the county in which he resides, for record. The probate judge shall record the

same in a book to be kept for that purpose, and endorse on the margin of the record and on the certificate the time he received the same for record, and make a proper index to all certificates by him recorded. The probate judge shall note in the margin of the record the revocation of a certificate, or any change in the location or death of the owner of a certificate. Upon application, the probate judge shall make out a certified copy of any such certificate and the endorsements thereon, and such certified copy shall be prima facie evidence of all matters and facts therein contained. Between the first and thirty-first days of December in each year, the probate judge shall furnish the secretary of the state board a list of all certificates recorded and in force, and also a list of all certificates which have been revoked or the owners of which have removed from the county, or died during the preceding year.

In case of a change of residence, the owner of a certificate shall have the same recorded anew by the probate judge of the county into which he removes. For services under this section the probate judge shall receive the following fees: For recording and indexing each certificate, fifty cents, and for certified copies, the same fees as are allowed by law for copies and certificates of records kept by the probate judge, to be paid by the holder of the certificate.

SEC. 4403*e*. Every person practicing midwifery in this state at the time of the passage of this act, shall within ninety days thereafter file with the probate judge of the county in which she resides, an affidavit duly attested, giving her name, age, residence, the length of time during which and the place or places at which she has been engaged in said practice, and the special education, if any, which she has received to fit her for such practice. Thereupon, upon payment of a fee of five dollars (fifty cents of which the probate judge shall retain

as his own fee, and the balance remit to the treasurer of the state board of registration and examination), the probate judge shall issue a certificate, upon a blank form furnished by the state board, which shall entitle the applicant and holder to practice midwifery in this state. Such certificate shall be recorded by the probate judge, and in case of a transfer of residence, again recorded in the county to which the midwife removes, as provided by section 4403*d*, regulating the record of physicians' certificates. The probate judge shall, annually, between the first and thirty-first days of December, furnish the secretary of the state board a list of all such certificates issued and in force, and also a list of all such certificates which have been revoked or the owners of which have removed from the county, or died during the preceding year. All persons desiring, after the passage of this act, to enter upon the practice of midwifery in this state, shall appear before the state board and submit to such examination in midwifery as the board shall require. If the applicant passes a satisfactory examination, the board shall, upon the payment of a fee of ten dollars, issue its certificate to that effect, which when filed with the probate judge for record, as provided in section 4403*d*, shall entitle the owner and holder thereof to practice midwifery in this state. A certificate to practice midwifery may be refused or revoked for the same cause in the same manner as provided in section 4403*c* in the case of certificates to physicians and surgeons. The certificate granted to practice midwifery shall not give the holder the right to perform version, or treat breech or face presentation, or do any obstetric operation requiring instruments, or treat any other abnormal condition, except in emergencies.

SEC. 4403*f*. Any person shall be regarded as practicing medicine or surgery within the meaning of this act who shall append the letters M. D. or M. B. to his name,

or for a fee prescribe, direct or recommend for the use of any person, any drug or medicine or any other agency for the treatment, cure or relief of any wound, fracture or bodily injury, infirmity or disease; provided, however, that nothing in this act shall be construed to prohibit service in case of emergency, or the domestic administration of family remedies; and this act shall not apply to any commissioned medical officer of the United States army, navy or marine hospital service in the discharge of his professional duties nor to any legally qualified dentist when engaged exclusively in the practice of dentistry nor to any physician or surgeon from another state or territory, who is a legal practitioner of medicine or surgery in the state or territory in which he resides, when in actual consultation with a legal practitioner of this state, nor to any physician or surgeon residing on the border of a neighboring state, and duly authorized under the laws thereof to practice medicine or surgery therein, whose practice extends into the limits of this state; providing that such practitioner shall not open an office or appoint a place to meet patients or receive calls, within the limits of this state.

SEC. 4403*g*. Any person practicing medicine or surgery as defined in section 4403*f* in this state, without having first complied with the provisions of sections 4403*c* and 4403*d*, except as herein provided, shall be deemed guilty of a misdemeanor, and shall be fined not less than twenty dollars nor more than five hundred dollars, or be imprisoned in the county jail not less than thirty days nor more than one year, or both. Any person practicing midwifery in this state without having complied with the provisions of section 4403*e*, except as therein provided, shall be deemed guilty of a misdemeanor and fined not less than twenty-five dollars nor more than one hundred dollars. Any person who shall file, or attempt to file as his own, the medical diploma or

certificate to practice of another, or shall file or attempt to file a false forged affidavit of his identity, or shall willfully swear falsely to any question which may be propounded to him on his medical examination, or to any affidavit required to be made or filed by him, with the state board of medical registration and examination shall be guilty of felony and be imprisoned in the penitentiary not more than five years nor less than one year. Such fines when collected shall be paid one-third to the person, corporation or medical society making the complaint or furnishing the information, one-third to the poor fund of the county, and one-third to the state board of medical registration and examination. The secretary of the state board of medical registration and examination is charged with the duty of enforcing this act. If he have knowledge or notice that the act has been or is being violated, he shall investigate the matter, and upon probable cause appearing, shall file a complaint and prosecute the offender. It shall be the duty of the prosecuting attorney, when requested by such secretary, to take charge of and conduct such prosecutions.

SECTION 3. Original sections 4403 and 6992 are hereby repealed, and this act shall take effect and be in force from and after its passage.

DAVID L. SLEEPER,
Speaker of the House of Representatives.

JNO. C. HUTSINPILLER,
President pro tem. of the Senate.

Passed February 27, 1896.

UNITED STATES OF AMERICA, OHIO, }
OFFICE OF THE SECRETARY OF STATE. }

I, SAMUEL M. TAYLOR, Secretary of State of the State of Ohio, do hereby certify that the foregoing is

an exemplified copy, carefully compared by me with the original rolls now on file in this office, and in my official custody as Secretary of State, as required by the laws of the State of Ohio, of an Act passed by the General Assembly of the State of Ohio, on the 27th day of February, A. D. 1896.

In TESTIMONY WHEREOF, I have hereunto subscribed my name, and affixed my Official Seal, at Columbus, the 28th day of February, A. D. 1896.

SAMUEL M. TAYLOR,

[SEAL.] *Secretary of State.*

PERMANENT MEMBERS OF THE

OHIO STATE MEDICAL SOCIETY.

CAPITALIZED: Life members.

Italicized: Deceased since last meeting.

Local Secretaries will please notify the Secretary of errors or omissions, and forward obituary notices with their annual catalogues.

Abbott, C. N., Academy of Medicine ---------- Cincinnati, 1892
Ackley, George B., Meigs County Medical Society --- Pomeroy, 1892
Adams, P. N., Montgomery County Medical Society --- Dayton, 1885
Adair, Samuel G., Washington Co. Medical Society --- Beverly, 1893
Albl, Michael A., Cuyahoga Co. Medical Society --- Cleveland, 1892
Alcorn, E. G., Gallia Co. Medical Society ---------- Gallipolis, 1895
Alcorn, John B., Gallia County Medical Society ---- Gallipolis, 1894
Aldrich, Daniel B., Ashtabula Co. Medical Society ---- Harbor, 1892
Aldrich, Chas. J., Cuyahoga Co. Medical Society --- Cleveland, 1891
Allard, Lorenz D., Pike Co. Medical Society ----- Portsmouth, 1894
Allen, C. O. ---------- Haydenville, 1895
Allen, Dudley P., Cuyahoga Co. Medical Society ---- Cleveland, 1885
Allen, George M., Academy of Medicine ---------- Cincinnati, 1892
Allen, S. E., Academy of Medicine ---------- Cincinnati, 1892
Andre, Orrin C., Hemptead Mem. A. of M ---------- Waverly, 1888
Archer, J. R ---------- N. Baltimore, 1892
Armentrout, Lyman W ---------- Mt. Vernon, 1892
Armstrong, C. L., Academy of Medicine ---------- Cincinnati, 1892

Axline, Chas. Z., Hild. Dist. Medical Society------Fultonham, 1884
Ayres, S. C., Academy of Medicine----------Cincinnati, 1877
Backus, L. C., Tri-State Medical Society----------Fayette, 1895
Bain, Frank D., Northwestern Ohio Medical Ass'n----Kenton, 1885
Baker, A. R., Cuyahoga County Medical Society----Cleveland, 1886
Baker, J. P., Hancock County Medical Society--------Findlay, 1891
Baker, William O., N. E. O. M. A----------Louisville, O., 1882
Baldwin, J. F., Academy of Medicine----------Columbus, 1875
Ballinger, J. B----------Webster, 1880
Bange, Theo., Academy of Medicine----------Cincinnati, 1892
Barnes, Noble P.--611 Maryland Ave., N. E., Washington, D C., 1894
Barnes, J. W., Ross County Medical Society ------Columbus, 1892
Barnes, T. S., Ross County Medical Society-------Chillicothe, 1890
Barnhill, James U., Academy of Medicine----- ---Columbus, 1884
Barrere, D. M., Montgomery Co. Medical Society-----Dayton, 1884
Barton, T. J., Muskingum Co. Medical Society------Zanesville, 1881
Bates, F. L., Allen County Medical Society ----------Lima, 1890
Battles, W. S., N. C. O. M. A----------Shreve, 1858
Bauer, M. M., N. E. O. M. A----------Lake, 1884
BEACH, J. N., Central Ohio M. S., Madison Co-----Jefferson, 1854
Beard, H. C., Hempstead Mem. Acad. Med--------Lucasville, 1892
Beardsley, C. E., N. W. O. M. A----------Ottawa, 1869
Becker, Bernard, Toledo Medical Association---- ----Toledo, 1892
Beck, John S., Montgomery County Medical Society--Dayton, 1879
Beckwith, Seth W., Toledo Medical Association-------Toledo, 1892
Beers, A. M., Tuscarawas Co. Medical Society, Newcomerstown, 1882
Bell, A. E., Muskingum County Medical Society----Zanesville, 1892
Belt, R. C., Miami Valley Medical Society----------Milford, 1892
Benner, C. T., N. W. O. M. A----------Tiffin, 1891
Bennett, W. C. (Morrow County)----------Iberia, 1892
Bennett, C. A., Clermont Co. Medical Society---Withamsville, 1892
Bertolette, Harry B., Wayne County Medical Society--Shreve, 1896
Beesey, J. Mortimer, Toledo Medical Association------Toledo, 1887
Bethauser, C. M., Academy of Medicine---------Columbus, 1895
Bevington, H. S., Crawford Co. Med. Society--Sulphur Springs, 1892
Bivans, W. A., Brown County Medical Society. ----New Hope, 1892

Bird, Edw. H., N. W. O. M. A.----Dupont, 1892
Blackburn, M. E., Academy of Medicine----Columbus, 1895
Blair, B. H., Warren County Medical Society----Lebanon, 1892
Blake, F. W., Academy of Medicine----Columbus, 1892
Blake, William H., Central Ohio Medical Society---Shadeville, 1878
Bland, J., Crawford County Medical Society----Bucyrus, 1892
Blankenhorn, H., U. M. A. N. E. O----Orrville, 1895
Bleile, A. M., Academy of Medicine----Columbus, 1892
Bodman, Lewis H., Toledo Medical Association----Toledo, 1892
Boerstler, George W----Lancaster, 1870
Bond, John W., Toledo Medical Association----Toledo, 1892
Boggess, E. M., Fayette Co. Med. Society---Washington C. H., 1892
Bohl, John, Sr., Washington Co. Med. Society---Watertown, 1892
Bonfield, C. L., Academy of Medicine----Cincinnati, 1892
Bonner, C. A., Montgomery Co. Medical Society----Dayton, 1892
Bonner, Horace, Montgomery Co. Medical Society---Dayton, 1890
Boone, D. W., Belmont County Medical Society----Bellaire, 1890
Boone, Jos. S., Belmont Co. Medical Society, Powhatan Point, 1892
Bowen, A. H., Academy of Medicine ----Columbus, 1878
Boylan, A. (Union County)----Milford Center, 1878
Boyd, James P., N. E. O. M. A----Akron, 1892
Bradford, W. N.----Cambridge, 1896
Brady, M. B., Academy of Medicine----Cincinnati, 1892
Brand, Walter W., Toledo Medical Association----Toledo, 1896
Brannan, T. H., Tuscarawas Co. Medical Society-Canal Dover, 1884
Brashear, B. B., Cuyahoga County Medical Society-Cleveland, 1886
Brayton, Asa, N. W. O. M. A.----Carey, 1892
Brent, C. P., Academy of Medicine----Cincinnati, 1892
BRICKER, W. R----Shelby, 1848
Brigham, O. S., Toledo Medical Association----Toledo, 1892
BRINKERHOFF, D. H., Sandusky Co. Med. Society-Fremont, 1853
Brockett, A. J----Cleveland, 1874
Brown, E. O. S., Pike Co. Medical Society----Beaver, 1895
Brown, H. M., Highland County Medical Society---Hillsboro, 1882
Brown, J. A----Germantown, 1886
Brown, J. E., Academy of Medicine----Columbus, 1892

Brown, R. A----------Circleville, 1896
Bruehl, Gust., Academy of Medicine----------Cincinnati, 1892
Brundage, L. A., Greene County Medical Society-------Xenia, 1892
Brush, Edmund C., Hildreth District Med. Society--Zanesville, 1878
Buckingham, John M., Clarke Co. Medical Society-Springfield, 1885
BUCKNER, J. H., Academy of Medicine---------Cincinnati, 1863
Buechner, W. L., Mahoning Co. Medical Society-Youngstown, 1879
Bunn, Jas. W., Adams County Medical Society---West Union, 1872
Bunts, Frank E., Cuyahoga Co. Medical Society----Cleveland, 1892
Burrows, S. S., Ashtabula Co. Medical Society------Columbus, 1895
Butler, Geo. O----------Cleveland, 1870
Butler, George W.----------Columbus, 1869
Caldwell, Jno. L., Pike County Medical Society------Waverly, 1894
Caldwell, J. S., Academy of Medicine---------Cincinnati, 1892
Caldwell, William, Sandusky Co. Medical Society----Fremont, 1886
Calhoun, W. M., Union M. A. Columbus------East Liverpool, 1892
Callinan, D. F., Academy of Medicine----------Corning, 1892
Calvin, J. H., Erie County Medical Society----------Salem, 1891
Campbell, Oscar B., Cuyahoga Co. Medical Society-Cleveland, 1892
Carmichael, W. A., Miami Valley Med. Society-----Loveland, 1871
Carpenter, E. G., Cuyahoga Co. Medical Society---Cleveland, 1892
Carpenter, Julia W., Academy of Medicine--------Cincinnati, 1879
Carrick, Anthony L., Academy of Medicine---------Cincinnati, 1871
Carroll, Thos. M, Clarke Co. Medical Society------Springfield, 1892
Carson, Archibald I., Academy of Medicine----Cincinnati, 1892
Carson, Frank D., Holmes County Medical Society----Benton, 1892
Case, Freeman D., Ashtabula County M. S.----------Ashtabula, 1886
Chadwick, Leroy S., Cuyahoga Co. Med. Society----Cleveland, 1892
Chamberlin, Chas. S., Trumbull Co. Medical Society Kinsman, 1892
Chapman, Byron, N. E. O. M. A.----------Copley, 1885
Chapman, Wm. C., Toledo Medical Association--------Toledo, 1875
Chesney, John A., Crawford Co. Medical Society----Bucyrus, 1892
Chidester, C. W----------Delaware, 1895
Chisholm, H.. Marion Co. Medical Society----------Marion, 1895
Clapp, Harold T., Cuyahoga County Medical Society Cleveland, 1891
Clark, C. F., Academy of Medicine----------Columbus, 1885

Clarke, Ida, Mahoning County Medical Society---Youngstown, 1889
Clark, Frank S., Cuyahoga County Medical Society--Cleveland, 1892
Clark, John H , Champaign Co. Med. Society--Mechanicsburg, 1869
Clark, Myron S., Mahoning Co. Medical Society--Youngstown, 1879
Clay, W. P----------Elyria, 1896
Cleaver, J. V., Summit County Medical Society--------Akron, 1892
Clemson, G. W., Perry Co. Medical Society----------Thornville, 1896
Clouse, Geo. M., Academy of Medicine----------Columbus, 1892
Cobbs, Chas----------New Athens, 1889
Cole, A. P., Ross Co. Medical Society----------Chillicothe, 1895
Cole, Wm. N., Columbus Acad. of Med----------Columbus, 1896
Coleman, N. R., Academy of Medicine ----------Columbus, 1875
Coldham, Wm. W., Toledo Medical Association--------Toledo, 1892
Collamore, George A., Toledo Medical Association-----Toledo, 1880
Collins, B. F., E. Ohio Medical Association----------Toronto, 1895
Collins, Edgar F----------Mt. Sterling, 1896
Collins, Milton H., Clarke Co Medical Society--So. Charleston, 1890
Collins, John W----------Steubenville, 1894
Colville, George H. (Belmont County)----------Harrisville, 1887
Combs, John S., Clermont Co. Medical Society---Owensville, 1892
Comegys, C. S., Academy of Medicine----------Cincinnati, 1892
Conklin, W. J., Montgomery Co. Medical Society-----Dayton, 1868
Conard, George R., Clinton Co. Medical Society--New Vienna, 1890
Conden, John F., Miami County Medical Society-----Morrow, 1892
Coue, J. E , Mahoning County Medical Society--Youngstown, 1889
Conn, Eli, Summit County Medical Society----------Akron, 1887
Conner, Phineas S., Academy of Medicine---------Cincinnati, 1868
Cook, G. F., Butler County Medical Society----------Oxford, 1885
Cook, J. E., Cleveland Medical Society---- --------Cleveland, 1895
Cook, Thomas M., Erie County Medical Society------Sandusky, 1892
Cooper, Albert, Central Ohio Medical Society------Columbus, 1881
Cooperrider, C. A., Academy of Medicine---- ------Columbus, 1892
Cope, E. C., Belmont Co. Medical Society----------Cope, 1895
Corbin, Lee, Montgomery County Medical Society----Dayton, 1892
Corlett, Wm. T., Cuyahoga Co. Medical Society----Cleveland, 1882
Corson, O. M., Butler County Medical Society----Middletown, 1879

Cosgrove, Thomas, Toledo Medical Association--------Toledo, 1892
COTTON, J. D., Washington Co. Medical Society----Marietta, 1852
Courtright, Alva P----------Circleville, 1871
Courtright, Geo. S----------Lithopolis, 1867
Cowan, F. C., N. C. O. Medical Society----------Ashland, 1896
Cox, J. M., Ross County Medical Society--------South Salem, 1877
Craig, J. Harvey, North Central Ohio M. S---------Mansfield, 1886
Crane, A. M., Marion County Medical Society---------Marion, 1881
Craver, S. Belle, Toledo Medical Association----------Toledo, 1892
Crawford, A. J----------Athens, 1896
Creps, Adolphus H., Allen Co. Medical Society-West Minster, 1892
Crile, Geo. W., Cuyahoga Co. Medical Society------Cleveland, 1892
Crider, Chas. L., Muskingum Co. Medical Society--Zanesville, 1894
Crossland, Jeff. C., Muskingum Co. Med. Society---Zanesville, 1890
Crump, A. A., Jr., Holmes Co. Med. Society------Millersburg, 1892
Culbertson, Louis Rogers----------Zanesville, 1896
Curry, John H., Toledo Medical Association----------Toledo, 1892
Curry, Frank C., Cincinnati Academy of Medicine----Milford, 1892
Cushing, Edward F., Cuyahoga Co. Med. Society----Cleveland, 1892
CUSHING, H. K., Cuyahoga Co. Medical Society--Cleveland, 1857
Dandridge, N. Pendleton, Academy of Medicine---Cincinnati, 1871
Davidson, N. P., Union County Medical Society-----Hilliards, 1890
Davison, John F., Northern Ohio Med. Society--No. Amherst, 1893
Davisson, J. Alexander, Preble Co. Med. Society-----Eldorado, 1896
Davis, Ben., Clark Co. Medical Society----------New Carlisle, 1895
Davis, Gilman R., Lawrence Co. Med. Soc----------Ironton, 1896
Davis, J. T., Muskingum County Medical Society--Zanesville, 1892
De La Barre, Paul B.----------Port Clinton, 1892
Death, H. J., Warren County Medical Society-------Franklin, 1892
DeCourcy, W. E., Academy of Medicine----------Cincinnati, 1892
Denman, Wm. C., Marion Co. Medical Society--------Marion, 1882
Dennis, W. H----------Burbank, 1895
Deuschle, W. D., Academy of Medicine----------Columbus, 1885
DeVilbiss, Allen, Toledo Medical Association----------Toledo, 1887
Dick, W. L., Academy of Medicine----------Columbus, 1892
Dickey, Thos. A., Butler County Medical Society--Middletown, 1879

Dine, C. L., N. W. O. M. A.---------- Minster, 1893
Dixon, M. F., Academy of Medicine---------Columbus, 1895
Dixon, W. A., Brown County Medical Society---------Ripley, 1889
Dolina, T. F., Montgomery County Medical Society----Dayton, 1892
Donnelly, James, Toledo Medical Association----------Toledo, 1892
Dorman, H. W., Ashtabula County Medical Society---Harbor, 1886
Dorsey, Jos. F.----------Dresden, 1894
Downs, Samuel----------Waterville, 1876
Dunlap, C. O.----------Athens, 1881
Duncan, A. M., Crawford County Medical Society----Bucyrus, 1886
Duncan, James A., Toledo Medical Association---------Toledo, 1874
Dunham, J. M., Academy of Medicine----------Columbus, 1895
Dunham, W. H., Academy of Medicine----------Cincinnati, 1892
Dutton, C. F., Cuyahoga County Medical Society---Cleveland, 1880
Eakins, Jehu, Gallia County Medical Society----------Patriot, 1894
Eddy, Chas. W., Washington Co. Medical Society----Marietta, 1888
Edwards, R. C----------W. Carlisle, 1895
Eichberg, Jos., Academy of Medicine ----------Cincinnati, 1882
Ellsberry, A. M., Brown County Medical Society--Georgetown, 1892
Ely, J. S., Belmont County Medical Society-------Barnesville, 1892
Emerick, E. J., Central Ohio Medical Society------Columbus, 1895
Emmons, D. R., Champaign Co. Med. Society---N. Lewisburg, 1895
Entrekin, F. W., Hancock County Medical Society----Findlay, 1892
Erwin, N. B., Sandusky County Medical Society --Gibsonburg, 1891
Esch, Jos. P., Erie County Medical Society----------Huron, 1892
Evans, A. E., Central Ohio Medical Society---------Columbus, 1882
Evans, Otho, Warren County Medical Society--------Franklin, 1892
Evans, George B., Montgomery Co. Medical Society---Dayton, 1892
Everts, Orpheus, Academy of Medicine----------Cincinnati, 1885
Faber, Chas. A., Toledo Medical Association----------Toledo, 1892
Fackler, John E----------Versailles, 1879
Farnsworth, G. B., Cleveland Medical Society-----Cleveland, 1895
Fassig, J. M., Muskingum County Medical Society--Zanesville, 1893
Faucett, R. C., Union Med. Ass'n of Columbiana--N. Jackson, 1896
Fels, Geo. W., Academy of Medicine----------Cincinnati, 1892
Fella, F. J., Toledo Medicial Association----------Toledo, 1892

Fisher, A. W., Toledo Medical Association----------Toledo, 1892
Fisher, W. H., Toledo Medical Association----------Toledo, 1892
Fisher, Phillip ----------Cincinnati, 1892
Fitzpatrick, T. V., Academy of Medicine----------Cincinnati, 1890
Fitzsimmons, J. F., Crawford Co. Medical Society----Bucyrus, 1892
Fletcher, Mordecai H., Academy of Medicine------Cincinnati, 1892
Flemming, J. C----------Carlisle, 1892
Flower, W. R., Ashtabula Co. Medical Society-----Ashtabula, 1895
Floyd, J. C. M., Jefferson Co. Medical Society---Steubenville, 1884
Foertmeyer, C. H., Academy of Medicine----------Cincinnati, 1892
Fogel, L. J.----------Cincinnati, 1892
Foltz, Tobias H., N. W. O. M. A.----------Lima, 1892
Folk, Peter----------Deavertown, 1894
Forchheimer, F., Academy of Medicine----------Cincinnati, 1892
Formorin, J. L., Clermont County Medical Society--Marathon, 1892
FORBES, S. F., Toledo Medical Association----------Toledo, 1856
Foshay, P. M., Cleveland Medical Society----------Cleveland, 1882
Foster, G. F., Ross County Medical Society--Kingston Centre, 1882
Fowler, Silas W.----------Delaware, 1873
Fox, J. F., Tuscarawas Co. Med. Society----New Philadelphia, 1895
Fraker, H. C., Academy of Medicine----------Columbus, 1895
Francis, A. W., Brown County Medical Society--------Ripley, 1892
Fraser, J. M., Cuyahoga County Medical Society----Cleveland, 1892
Fraunfalter, J.----------Canton, 1886
French, Jas. M., Academy of Medicine----------Cincinnati, 1892
FULLER, S. W.----------Bellefontaine, 1853
Fullerton, Erskine B., Academy of Medicine-------Columbus, 1894
Gage, Rawson S., Washington Co. Medical Society-----Qualey, 1892
Gahm, J. L., Hempstead Academy of Medicine--------Jackson, 1895
Gale, George T., Washington Co. Medical Society----Newport, 1888
Galloway, C. M., Greene County Medical Society ------Xenia, 1888
Galloway, W. A., Greene County Medical Society ------Xenia, 1860
Gardiner, W. G., N. W. O. M. A ----------Toledo, 1892
GAY, N ----------Columbus, 1848
Gehritt, T. M., N. W. O. M. A----------Deshler, 1892
Getzloff, B., Shelby Co. Medical Society ---------Wapakoneta, 1895

Geyer, Jos. L., Muskingum County Medical Society—Norwich, 1892
Gibbon, H. B., N. W. O. M. A——Tiffin, 1891
Gifford, Wm. R., Toledo Medical Association——Toledo, 1892
Gillette, Wm. J., Toledo Medical Association——Toledo, 1892
Gilliam, D. Tod, Academy of Medicine——Columbus, 1873
Gilliam, E. M——Columbus, 1892
Glenn, W. W., Highland Co. Medical Society——Hillsboro, 1895
Goebel, Anna M., Allen County Medical Society——Lima, 1892
Goetz, F. E., Cuyahoga County Medical Society——Cleveland, 1892
Goodhue, Geo., Montgomery County Medical Society—Dayton, 1884
Goode, B. P., Academy of Medicine (withdrawn)—Cincinnati, 1892
Gores, F. C., Academy of Medicine——Cincinnati, 1892
Gordon, O. F., Cuyahoga County Medical Society—Cleveland, 1892
Gordon, Patrick A——Junction City, 1894
GORDON, T. W., Brown Co. Medical Society—Georgetown, 1849
Goss, C. W——Lancaster, 1895
Goss, J. H., Central Ohio Medical Society——Lancaster, 1884
Graham, Jno. C., Academy of Medicine——Denver, 1892
Graefe, Wm., Erie County Medical Society——Sandusky, 1874
Graefe, Chas., Erie County Medical Society——Sandusky, 1891
Granger, Francis M., Highland Co. Medical Society—Russell, 1881
Gray, C. G., Lawrence Co. Medical Society——Ironton, 1896
Gray, Francis C., Montgomery Co. Medical Society—Dayton, 1894
Green, Henry S. (Morrow Co.)——Cardington, 1878
Greene, D. W., Montgomery Co. Medical Society——Dayton, 1882
Griffis, F. C——Mt. Gilead, 1896
Grimm, Adolph, Academy of Medicine——Cincinnati, 1892
Groves, J. E., Tuscarawas Co. Medical Society—Uhrichsville, 1884
Guerin, Z. F., Central Ohio Medical Society——Columbus, 1884
Guiss, W. H., Crawford Co. Medical Society——Tiro, 1895
Haldeman, Jno. S., Muskingum Co. Med. Society—Zanesville, 1885
Halderman, S. S., Hempstead Mem. Academy—Portsmouth, 1896
Hall, Willis W., Clarke County Medical Society—Springfield, 1882
Hall, Rufus B., Academy of Medicine——Cincinnati, 1884
Hall, C. T., Warren County Medical Society——Mason, 1892
Hall, Willard A., Ross County Medical Society—Chillicothe, 1896

Hamann, C. H., Cleveland Medical Society---------Cleveland, 1895
Hamer, W. W., Am. Medical Association---------Bellefontaine, 1895
Hamilton, Horatio A., Wood Co. Medical Society--Perrysburg, 1886
Hamilton, W. D., Academy of Medicine----------Columbus, 1886
Hamilton, L. D., Marion County Medical Society------Marion, 1896
Hamilton, C. S., Academy of Medicine----------Columbus, 1891
HAMILTON, J. W., Academy of Medicine--------Columbus, 1849
Hancock, W. D., Butler County Medical Society-----Melville, 1892
Handerson, H. E., Cuyahoga Co. Med. Society------Cleveland, 1892
Haney, Josiah C----------Dalton, 1896
Hardy, Martin V., Washington Co. Med. Society-----Marietta, 1892
Hardy, John C., Washington Co. Medical Society----Marietta, 1886
Hart, Romeyn B., Jr., Washington Co. Med. Society-Marietta, 1892
Hart, C. S. ----------Marietta, 1895
Hart, Samuel, Washington Co. Medical Society------Marietta, 1887
Hartman, Geo. W., N. W. O. M. A----------Wauseon, 1887
Hartman, S. D., Miami Co. Medical Society---Tippecanoe City, 1874
Harrison, E. B., N. W. O. M. A---------- Napoleon, 1869
HARMON, JULIAN, Trumbull Co. Med. Society----Warren, 1857
Harmon, J. D., Trumbull Co. Medical Society--------Warren, 1895
Harper, E. A----------Columbus, 1896
HART, B. F., Washington Co. Medical Society-------Marietta, 1854
Hasencamp, Oscar, Toledo Medical Association--------Toledo, 1891
Hathaway, Harrison, Toledo Medical Association-East Toledo, 1874
Hatch, Chas. A----------Newark, 1893
Hawley, Edwin P., Cuyahoga Co. Med. Society-----Cleveland, 1892
Hayes, J. D., Perry Co. Medical Society----------Somerset, 1895
Haynes, J. T., Erie County Medical Society---------Sandusky, 1893
Haynes, J. Purcell, Toledo Medical Association--------Toledo, 1892
Hayward, E. T. ----------Waterford, 1896
Heaton, Townsend, Academy of Medicine----------Aberdeen, 1892
Heard, Eugene N., N. W. O. M. A----------Sandusky, 1892
Heffner, G. W., Starling Medical College----------Circleville, 1895
Heiter, Carl, Erie County Medical Society----------Sandusky, 1875
Heidrick, Louis W., Toledo Medical Association-------Toledo, 1892
HENDERSON, D. W----------Marysville, 1856

Henderson, Robert, Champaign Co. Medical Society—Urbana, 1892
Henderson, Geo. W., N. W. O. M. A—West Cairo, 1892
Hendly, F. W., Academy of Medicine—Cincinnati, 1892
Henry, A. G., N. W. O. M. A—North Baltimore, 1892
Hendrixson, Hugh, Academy of Medicine—Columbus, 1868
Herrick, H. J., Cuyahoga Co. Medical Society—Cleveland, 1868
Herrick, H. B., Cuyahoga Co. Medical Society—Cleveland, 1895
Hersh, E. G., Hancock County Medical Society—McComb, 1892
Heweston, H. L., Tuscarawas Co. Med. Society—Uhrichsville, 1895
Hewetson, Alex. H. (Belmont County)—St. Clairsville, 1894
Hiestand, E B., N. W. O. M. A—Kenton, 1884
Hillbish, Fred S—Fremont, 1878
Hill, Frank E., Clermont Co. Med. Society—Neville, 1892
Hill, Wm. W., Wood County Medical Society—Weston, 1892
HILL, N. S., Clermont County Medical Society—Neville, 1866
Hillkowitz, Wm., Academy of Medicine—Cincinnati, 1892
Hines, J. Arthur—Van Wert, 1879
Hiner, S. B., Allen County Medical Society—Lima, 1874
Hinckley, H. D., Butler County Medical Society—Cincinnati, 1887
Hixon, M. M., N. W. O. M. A—Dupont, 1887
Hobbs, Wilbert A., Union Co. Med. Society—East Liverpool, 1889
Hobson, John A., Belmont Co. Medical Society—Flushing, 1891
Hoge, W. D., Eastern Ohio Medical Society—Portland Sta., 1895
Hoege, G. L., N. W. O. M. A—Fostoria, 1895
Hoeltge, A. E., Academy of Medicine—Cincinnati, 1892
Hoff, Josiah W., Meigs County Medical Society—Pomeroy, 1872
Holliday, W. W., Cuyahoga Co. Medical Society—Cleveland, 1892
Holliday, Benj. W., Cuyahoga Co. Medical Society—Cleveland, 1875
Holcomb, Leroy S—Pennville, 1894
Holdren, G. W., Fayette Co. Medical Society—Bloomingburg, 1892
Holman, A. W—Circleville, 1895
Holmes, C. R., Academy of Medicine—Cincinnati, 1892
Holston, J. G. F., Muskingum Co. Medical Society—Zanesville, 1892
Homes, W. W—Columbus, 1895
Hoover, C. F., Cleveland Med. Society—Cleveland, 1896
Hoover, Collins M., Union Medical Society—Alliance, 1885

Hoover, Thos. C., Academy of Medicine---Columbus, 1891
Hoover, Albert, N. E. O. M. S---Akron, 1892
Hoppe, H. H., Academy of Medicine---Cincinnati, 1892
Hottendorf, Louis P., Academy of Medicine---Cincinnati, 1892
Hous, Geo. W., Montgomery Co. Medical Society---Clayton, 1892
Hough, C. A., Warren County Medical Society---Lebanon, 1890
Hough, Wayland S., Summit Co. Med. Society, Cuyahoga Falls, 1875
House, A. F---Cleveland, 1880
Howard, W. T., Cuyahoga Co. Medical Society---Cleveland, 1895
Howell, J. Morton, Fayette Co. Med. Society, Washington C. H., 1892
Hubbard, Thomas, Toledo Medical Association---Toledo, 1889
Hudson, J. F., N. E. O. M. A---Canton, 1892
Hughes, E. E.---Oak Hill, 1895
Hughes, F. M---Sandusky, 1892
Hughes, D. E---Delaware, 1895
Hughey, J. W. (Fayette County)---Washington C. H., 1892
Hulin, O. W., Union Medical Ass'n of N. E. Ohio--Greenford, 1895
Humiston, Wm. H., Cuyahoga Co. Medical Society--Cleveland, 1880
Humphreys, C. H., Montgomery Co. Medical Society--Dayton, 1892
Hunt, A. H---Wooster, 1892
Hurd, A., Hancock County Medical Society---Findlay, 1870
Hussey, M. F., Shelby County Medical Society---Sidney, 1892
Huston, W. O---Bellaire, 1894
HYATT, E. H---Delaware, 1862
Ikirt, G. P. (Champaign County)---East Liverpool, 1882
Ireland, W. E., Fayette Co. Medical Society, Washington C. H., 1887
Ireland, S. A., Fayette Co. Medical Society, Washington C. H., 1892
Ireton, E. C---Marathon, 1892
Irvin, John W., Ashland Co. and N. C. O---Magnetic Springs, 1896
Jackson, T. W., Northeastern Ohio Medical Ass'n---Akron, 1895
Jacobs, Harold H., N. E. O. M. A---Akron, 1892
Jacobs, M. M., Butler County Medical Society---Hamilton, 1895
Jacobs, W. C.---Akron, 1892
Jenkins, M. J., Central Ohio Medical Society---Plain City, 1895
Jenks, Wm. O., Cuyahoga Co. Medical Society---Nottingham, 1892
Jennings, Ellis, Montgomery Co. Medical Society---Dayton, 1867

Jennings, Gainor, Miami County Medical Society—West Milton, 1892
Jewett, H. S., Montgomery County Medical Society—Dayton, 1871
Johnson, O., Central Ohio Medical Society—Worthington, 1878
Johnston, Alice M., Central Ohio Medical Society—Columbus, 1895
Jones, Wm. A.—Toledo, 1892
Jones, L. M., Greene County Medical Society—Jamestown, 1892
Jones, J. D., Cuyahoga County Medical Society—Cleveland, 1870
Jones, Geo. E., Academy of Medicine—Cincinnati, 1892
Jones, H. S.—Columbus, 1895
JONES, R. E., N. W. O. M. A.—Gomer, 1863
JONES, T. W.—Columbus, 1847
Joseph, Leopold, Academy of Medicine—Cincinnati, 1892
Judkins, Wm., Academy of Medicine—Cincinnati, 1892
Judkins, C. P., Academy of Medicine—Cincinnati, 1887
Judkins, Jas. A.—Barnesville, 1894
Judy, C. S., Montgomery Co. Medical Society—Miamisburg, 1896
Junkerman, Geo. S., Academy of Medicine—Cincinnati, 1892
Kaestlen, Samuel E., Cuyahoga Co. Medical Society—Cleveland, 1892
Kahn, L., Academy of Medicine—Columbus, 1895
Kammann, Albert A., Academy of Medicine—Cincinnati, 1892
Kautz, J. W., Brown County Medical Society—Arnheim, 1892
KAY, ISAAC, Clarke County Medical Society—Springfield, 1853
Keck, Peter A., Academy of Medicine—Cincinnati, 1892
Kelley, H. R.—Galion, 1868
Keller, B. T., Fayette Co. Medical Society—Bloomingburg, 1891
Keller, Thos. F.—Tiffin, 1887
Kemp, Lucia, Crawford County Medical Society—Bucyrus, 1892
Kendig, Elias V., Ashland Co. Medical Society—Hayesville, 1874
Kerns, J. T. Walpole, E. O. M. S.—Bellaire, 1892
Kiely, W. E., Academy of Medicine—Cincinnati, 1892
KINSMAN, D. N., Academy of Medicine—Columbus, 1864
Kimmell, J. A., Hancock County Medical Society—Findlay, 1892
King, C. P.—Newark, 1894
King, J. R., Academy of Medicine—Cincinnati, 1892
Kirkley, Cyrus A., Toledo Medical Association—Toledo, 1874
Kitchen, Francis A., Toledo Medical Association—Toledo, 1892

Kline, P. J., Hempstead Academy of Medicine---Portsmouth, 1895
Knowlton, W. A----------Cleveland, 1892
Koehler, Max, Academy of Medicine----------Cincinnati, 1893
Kolb, Matthew G., Cuyahoga Co. Medical Society--Cleveland, 1892
Kramer, F. H., Academy of Medicine----------Cincinnati, 1892
Krause, B., Cuyahoga County Medical Society------Cleveland, 1880
Krause, L S., Montgomery Co. Medical Society W. Carrollton, 1892
Kreiger, Gustave S----------Madisonville, 1884
Kreider, C. L., Erie County Medical Society------Monroeville, 1892
Krouse, Louis J., Academy of Medicine----------Cincinnati, 1892
Landman, Otto, Toledo Medical Association----------Toledo, 1892
Langdon, F. W., Academy of Medicine----------Cincinnati, 1892
LANDON, C. P., Central Ohio Medical Society-----Columbus, 1851
Larimore, F. C., N. C. O. M. S----------Mt. Vernon, 1871
Lash, Josiah W., Ross County Medical Society ----Chillicothe, 1879
Lathrop, Arthur B., N. W. O. M. A.----------Swanton, 1887
Lawless, James T., Toledo Medical Association--------Toledo, 1887
Lawrence, F. F., Academy of Medicine----------Columbus, 1888
Lawrence, J. C., Academy of Medicine----------Columbus, 1895
Leach, Sherman----------Mt. Sterling, 1888
Leahy, Maurice----------Tiffin, 1891
Lee, J. L., N. E. O. M. A----------Akron, 1892
LeFevre, Edwin, Shelby County Medical Society------Sidney, 1891
Lehman, C. W., Preble County Medical Society--------Eaton, 1895
Leick, G. F., Cuyahoga County Medical Society----Cleveland, 1892
Lenhart, Charles M----------Zanesville, 1894
Leonard, Wilbur N----------Delaware, 1891
LEONARD, B. B., N. O. M. A----------West Liberty, 1854
Leslie, J. M., Ross County Medical Society--------Chillicothe, 1878
Lewis, W. C. (Fairfield County)----------Rushville, 1869
Lichliter, David C., Montgomery Co. Med. Society----Dayton, 1892
Lightner, S. B., Clinton County Medical Society-------Sabina, 1888
Lincoln, William, Cleveland Med. Society----------Cleveland, 1896
Lindsay, J. A., Eastern Ohio Medical Society------Salineville, 1895
Longfellow, R. C., Academy of Medicine----------Cincinnati, 1892
Love, Ephraim W., Brown Co. Medical Society---Fayetteville, 1892

LOVING, STARLING, Academy of Medicine------Columbus, 1858
Lower, Wm. E., Cleveland Med. Soc----------Cleveland, 1896
Lowman, J. H., Cuyahoga County Medical Society-Cleveland, 1877
Lowry, Joseph W., Lawrence Co. Med. Society--------Ironton, 1896
Lucas, V. C., Cuyahoga County Medical Society----Cleveland, 1892
Lusk, S. B., Marion County Medical Society-----Waynesfield, 1895
Lyle, Benj. F., Academy of Medicine----------Cincinnati, 1892
LYMAN, C. N., N. E. O. M. A----------Wadsworth, 1852
McCLURE, JAMES, Washington Co. Med. Society---Marietta, 1866
McClung, John C., N. W. O. M. A---------Leipsic, 1887
McCollum, E. J, N. W. O. M. A----------Tiffin, 1871
McCoy, Clem. D., N. W. O. M. A----------Kenton, 1892
McCurdy, S. L., Tuscarawas Co. Med. Society-Pittsburgh, Pa., 1882
McCurdy, John, Mahoning Co. Medical Society--Youngstown, 1870
McCullough, Jos. A----------Steubenville, 1894
McClellan, J. S., Belmont County Medical Society----Bellaire, 1894
McDougal, John G., Hildreth District M. A.---New Lexington, 1894
McGee, John B., Cuyahoga Co. Medical Society----Cleveland, 1880
McGavren, Geo. W., N. W. O. M. A----------Van Wert, 1892
McGavren, Samuel B----------Cadiz, 1887
McIntire, Wm., Central Ohio Medical Society---Warrensburg, 1881
McKee, Edward S., Academy of Medicine----------Cincinnati, 1886
McKim, F. E---------- Marietta, 1893
McKinley, E. Burris, N. W. O. M. A----------Vaughnsville, 1887
McKecknie, Josiah B., Clinton Co. Med. Society---Cincinnati, 1892
McLean, J. T., Tuscarawas Co. Med. Society-New Philadelphia, 1884
McMurray, A. B----------Marion, 1879
McNeal, F. B----------Columbus, 1885
McQuaide, Thos. L. (Guernsey County)----------Cambridge, 1894
McVety, A. F., Lucas Co. Medical Society----------Toledo, 1895
Macready, James, Butler County Medical Society-----Monroe, 1885
Mackenzie, J. C, Academy of Medicine----------Cincinnati, 1892
Maerker, A. E. H., N. W. O. M. A----------Napoleon, 1892
Marquart, Oscar M., Greene Co. Medical Society------Osborn, 1891
Marris, Joseph----------Columbus Grove, 1892
Markley, Lee, Brown County Medical Society----Georgetown, 1892

Martin, Jas., N. E. O. M. A. (Wayne County)---Fredericksburg, 1892
Marshall, G. M , Hempstead Acad. of Medicine---Portsmouth, 1895
Marshall, W. C., Montgomery Co Medical Society----Dayton, 1892
Martin, John T., Marion County Medical Society------Marion, 1884
Martin, John C., Hancock County Medical Society---Findlay, 1887
Marsh, F. O., Academy of Medicine----------Cincinnati, 1892
Marquis, Thos. B., N. E. O. M. A----------New Lisbon, 1892
Mattoon, F. N. (Madison County)----------Plain City, 1881
Matthias, A. C., N. W. O. M. A----------Gilboa, 1892
Maynard, O. T----------Elyria, 1892
May, John B----------New Holland, 1892
Means, Chas. S., Columbus Acad. of Med----------Columbus, 1896
Means, W. J., Central Ohio Medical Society--------Columbus, 1892
Melick, Wm. A., Muskingum Co. Medical Society--Zanesville, 1892
Merriman, D. J., Portage Co. Medical Society----Painesville, 1884
Merriam, E. D., Ashtabula Co. Medical Society-----Conneaut, 1884
Merz, Chas. H., Erie Co. Medical Society----------Sandusky, 1891
Messenger, A. C., Greene Co. Medical Society----------Xenia, 1896
Metzler, Abraham S., Holmes Co. Medical Society------Baltic, 1874
Mills, J. T., Central Ohio Medical Society----------Jersey, 1878
Miller, John F., Shelby Co. Medical Society----Port Jefferson, 1892
Miller, T. Clarke, N. E. O. M. A----------Massillon, 1893
Miller, Delbert J., Union Co. Medical Society------N. Benton, 1892
Miller, A. T., Tuscarawas Co. Medical Society----Shanesville, 1890
Milliken, Dan, Butler Co. Medical Society----------Hamilton, 1879
Milliken, B. L., Cuyahoga Co. Medical Society-----Cleveland, 1885
Mills, C. H., N. W. O. M. S----------Toledo, 1888
Mitchell, E. W., Academy of Medicine, Cincinnati--Avondale, 1892
Moody, Milo M., Union Co. Medical Society -------Chatham, 1892
Moore, D. L., Academy of Medicine----------Columbus, 1895
Moore, Lyman G., Trumbull Co. Medical Society----Kinsman, 1878
Moore, H. M. W., Academy of Medicine ----------Columbus, 1894
Morgan, R. J., Northwestern Ohio Medical Ass'n---Van Wert, 1895
Morgan, J. F., Hempstead Academy of Medicine-----Jackson, 1895
Mory, J. J----------St. Henrys, 1871
Morehouse, G. W----------Sparta, 1890

Morris, Jonathan (Lawrence County) ---------- Ironton, 1863
Morris, Joseph, N. W. O. M. A ---------- Columbus Grove, 1879
Mosgrove, J. M., Champaign Co. Medical Society ---------- Urbana, 1884
MOUNTS, J. L., Warren Co. Med. Society ---------- Morrow, 1860
Murphy, C. F., Hempstead Academy of Med., New York City, 1895
Murphy, John A., Academy of Medicine ---------- Cincinnati, 1872
Murphy, John W., Academy of Medicine ---------- Cincinnati, 1892
Murbach, Andrew J., N. W. O. M. A ---------- Archbald, 1874
Murray, Langdon S., N. E. O. M. A ---------- Medina, 1890
Myers, Noah, Clarke County Medical Society ---------- Springfield, 1892
Myers, I. A., N. C. O. M. S ---------- Shelby, 1892
Myers, J. E., Clarke County Medical Society ---------- Springfield, 1892
Nash, E. King (Summit County) ---------- Montrose, 1876
Nau, J. G. (Fairfield County) ---------- Carroll, 1878
Neil, Alexander ---------- Columbus, 1868
Nelson, J. W., Clarke County Medical Society ---------- Springfield, 1892
Newton, C. W ---------- Toledo, 1895
Niles, L. E ---------- Springfield, 1896
Noble, N. T ---------- St. Marys, 1892
Noble, Herbert E., N. W. O. M. A ---------- Stony Ridge, 1892
Noble, Chas. D ---------- Oberlin, 1893
Norris, Thos. B. (Franklin County) ---------- Alton, 1882
North, John, Toledo Medical Association ---------- Toledo, 1891
Norton, F. B., Cuyahoga County Medical Society ---------- Cleveland, 1892
Noyes, H. J., Hildreth District M. A ---------- McConnellsville, 1888
Nungesser, J. J., Cleveland Medical Society ---------- Cleveland, 1895
Obitz, N ---------- Columbus, 1895
Oglesbee, Wm. E., Warren Co. Medical Society ---------- Waynesville, 1892
Ohlmacher, A. P., Cuyahoga Co. Medical Society ---------- Cleveland, 1895
Oliver, J. C., Academy of Medicine ---------- Cincinnati, 1892
Olmstead, D. S., Holmes County Medical Society ---------- Millersburg, 1892
Osborn, Mary E ---------- Cincinnati, 1892
Oster, L. W., Cuyahoga County Medical Society ---------- Cleveland, 1892
Overly, Jno. E., Central Ohio Medical Society ---------- Columbus, 1888
Palmer, Chauncey D., Academy of Medicine ---------- Cincinnati, 1871
PATTERSON, A. V ---------- Mansfield, 1861

Patrick, Nathan E., Muskingum Co. Med. Society--Zanesville, 1894
Patrick, O. H----------Ada, 1895
PEARCE, ENOCH----------Steubenville, 1859
Pennell, W. W----------Frederickstown, 1884
Peskind, Arnold, C. C. M. S----------Cleveland, 1892
Peter, Robert, Tuscarawas Co. Medical Society--------Toledo, 1891
Petitt, Richard R., Montgomery Co. Medical Society---Dayton, 1885
Phillips, W. S., N. W. Ohio Medical Society------Belle Centre, 1895
Piper, Wm., Belmont County Medical Society--------Bellaire, 1892
Plummer, Frank E----------Coalton, 1896
Porter, W. D., Academy of Medicine----------Cincinnati, 1892
Potter, S. B----------Frederickstown, 1892
Potter, Nathaniel, Ross County Medical Society ------Adelphi, 1890
Potts, Chas. N., Allen County Medical Society-------Colorado, 1892
Powell, Wm. S----------Defiance, 1881
Pratt, L. C----------Bellefontaine, 1895
Price, Joseph, Portage County Medical Society-------Randolph, 1852
Price, F. K., Tuscarawas Co. Medical Society--------Dennison, 1895
Prior, Amelia J., Academy of Medicine----------Cincinnati, 1892
Probst, C. O., Central Ohio Medical Society--------Columbus, 1892
Pugh, Frank H., N. W. O. M. A., Toledo State Hospital--Bryan, 1892
Pumphrey, R. J., Belmont Co. Medical Society------Massillon, 1895
Quirk, Howard W., Cuyahoga Co. Medical Society--Cleveland, 1889
Quinn, Allen T., Clinton Co. Medical Society-----Wilmington, 1881
Rambo, Cyrus M., Muskingum Co. Med. Society---Zanesville, 1894
Ranny, Sylvester W----------New Albany, 1878
Rank, W. C----------Newark, 1895
Rankin, Theodore W., Academy of Medicine-------Columbus, 1881
Ransohoff, Joseph, Academy of Medicine----------Cincinnati, 1879
Rardin, Joseph S----------Portsmouth, 1892
Ravogli, Augustus, Academy of Medicine----------Cincinnati, 1892
Ray, J. B., Pike County Medical Society----------Omega, 1896
Ray, J. H., Southern Ohio A. of M----------Coalton, 1895
REAMY, THAD. A., Academy of Medicine------ Cincinnati, 1855
Redrow, L., Batavia County Medical Society----Williamsburg, 1895
Reed, Calvin H., Toledo Medical Association----------Toledo, 1873

Reed, R. Harvey, N. C. O. M. A----------Columbus, 1884
Reed, T. J----------Massillon, 1881
Reed, Chas. A. L., Academy of Medicine----------Cincinnati, 1881
Reemelin, R. H., Academy of Medicine----------Cincinnati, 1892
REEVE, J. C., Montgomery Co. Med. Society---------Dayton, 1861
Reeve, J. C., Jr., Montgomery Co. Med. Society ------Dayton, 1892
Reif, Chas. F----------Fremont, 1892
Reinhart, James C., Toledo Medical Association-------Toledo, 1887
Rheinfrank, J. H., N. W. O. M. A----------Perrysburg, 1886
Rheinfrank, W. H----------Perrysburg, 1895
Renneker, A. P----------1612 Bay Miller St., Cincinnati, 1892
Rhu, Aug., Marion County Medical Society----------Marion, 1886
Richards, A., Perry Co. Medical Society-------New Lexington, 1895
Richardson, Alonzo B., Academy of Medicine------Columbus, 1891
Ricketts, Edwin, Academy of Medicine----------Cincinnati, 1891
Ridgeway, N. B., N. C. M. S----------Galion, 1878
Riggs, J. M----------Bryan, 1873
ROBINSON, JAMES D., Wayne Co. Med. Society---Wooster, 1856
Roberds, T. W., Highland County Medical Society-------Bell, 1892
Rodebaugh, Henry A----------Marysville, 1890
Rodgers, J. H----------Louisville, 1889
Rogers, H. W., Cuyahoga County Medical Society--Cleveland, 1892
Rogers, W. K., Acad. of Medicine---------Columbus, 1895
ROGERS, J. H., Clarke County Medical Society---Springfield, 1859
Romspert, J. A., Montgomery Co. Med. Soc---Dayton Asylum, 1892
Root, H. A., Toledo Medical Association----------Toledo, 1892
Rosenwasser, M., Cuyahoga Co. Medical Society----Cleveland, 1880
Rosenfeld, A., Academy of Medicine----------Cincinnati, 1892
Rosengrant, Thos. S----------Batesville, 1894
Roulet, Chas., Toledo Medical Association----------Toledo, 1892
Rouse, Wm. L., Green County Medical Society--Paintersville, 1896
Rowe, Geo. T., Pickaway County Medical Society---Circleville, 1881
Rowles, W. T., Academy of Medicine----------Columbus, 1888
Rudy, A. S., Allen County Medical Society----------Lima, 1892
Ruess, Henry A., N. C. O. M. S----------Mansfield, 1892
Russell, E. S., Tuscarawas Co. Medical Society----Tuscarawas, 1880

Russell, Geo. C., Cuyahoga Co. Medical Society----Cleveland, 1892
Sabin, Thos. M., Trumbull Co. Medical Society----Warren, 1893
Sager, Jos., N. W. O. M. A----Celina, 1882
Sampson, G. W----U. Sandusky, 1895
Santee, Leon B., Stark Co. Medical Society----Marlborough, 1885
Sattler, Robert, Academy of Medicine----Cincinnati, 1872
Sawyer, J. P., Cuyahoga County Medical Society---Cleveland, 1892
Scatterday, W. F----Columbus, 1895
Schnetzler, H. Marcus, Toledo Medical Association----Toledo, 1874
Schwab, Louis, Academy of Medicine----Cincinnati, 1892
Schwab, Emanuel, Academy of Medicine----Cincinnati, 1892
Schutzbach, J. C., Tuscarawas Co. Medical Society--Strasburg, 1892
Schooley, Lindley----Belmont, 1894
Schueller, J. B., Central Ohio Medical Society ----Columbus, 1869
Scott, B. B., Knox County Medical Society----Mt. Vernon, 1892
Scott, N. Stone, Cuyahoga County Medical Society-Cleveland, 1892
Scott, Wm. J., Cuyahoga County M. S----Cleveland, 1855
Scott, Wm. Alfred (Fulton County)----Swanton, 1878
Scott, X. C., N. E. O. M. A----Cleveland, 1874
SCOVILLE, S. S., Warren County Medical Society---Lebanon, 1859
Sears, O. T., Erie County Medical Society----Put-in-Bay, 1892
Seeley, W. W., Academy of Medicine----Cincinnati, 1871
Sittel, Theo., Academy of Medicine----Cincinnati, 1892
Sewell, S. G., Greene County Medical Society-New Burlington, 1892
Shaw, Wm. E., Academy of Medicine----Cincinnati, 1892
Shaller, John M., Academy of Music----Cincinnati, 1892
Shalliott, Peter, Tuscarawas Co. M. S----Winesburg, 1891
Sharp, Amos W., Central O. M. S----Columbus, 1892
Sharp, B. M., Shelby County Medical Society----Sidney, 1885
Sheldon, S. B., Brown County Medical Society----Five Mile, 1882
Sherman, H. G., Cuyahoga Co. Medical Society----Cleveland, 1892
Shields, E. H., Academy of Medicine----Cincinnati, 1895
Shriner, Pinckney D----Columbus, 1895
Silver, D. R., Shelby County Medical Society----Sidney, 1870
SINNETT, E., Licking County Medical Society----Granville, 1850
Sipher, J. N.. Cuyahoga County Medical Society----Cleveland, 1892

Skeel, R. E., Cuyahoga County Medical Society----Cleveland, 1892
Slocum, Chas. E., N. W. O. M. A----Defiance, 1874
Smith, D. M.,----Newark, 1895
Smith, Wm. G., Portage County Medical Society----Ravenna, 1885
Smith, H. H----Lexington, 1892
Smith, J. M. (Tuscarawas)----New Philadelphia, 1884
Smith, Chas. N., Toledo Medical Association----Toledo, 1887
Smith, D. B., Cuyahoga County Medical Society----Cleveland, 1892
Snodgrass, Jessie, N. W. O. M. A.----Kenton, 1887
Snyder, Chas----London, 1895
SNYDER, D. J. (Harrison Co.)----Scio, 1850
Snyder, S. P----New Bedford, 1882
Snyder, Walter H., Toledo Med. Association----Toledo, 1896
Southard, John Q----Marysville, 1882
Souders, Samuel, Montgomery County Med. Soc----Dean, 1879
Souder, R. L., N. W. O. M. A. (Wyandot Co.)----Nevada, 1892
Speidel, C. G. E., Academy of Medicine----Cincinnati, 1892
Spence, J. A. (Wellsville)----Pittsburg, Pa., 1888
Spencer, E. R., N. E. O. M. A ----Doylestown, 1885
Spenzer, John G., Cleveland and Cuyahoga Co----Cleveland, 1896
Spiers, H. H----Ravenna, 1892
Stanton, Byron, Academy of Medicine----Cincinnati, 1892
Straight, Howard S., Cuyahoga Co. Med. Society----Cleveland, 1892
STANSELL, J. A----Forrest, 1866
Stamm, M., Sandusky County Medical Society----Fremont, 1891
Stark, Sigmar, Academy of Medicine----Cincinnati, 1892
Stanley, E.----Sandusky, 1870
Stein, G. S., Academy of Medicine----Columbus, 1888
Steiner, D. W., Allen County Medical Society----Lima, 1890
Stewart, Jno. O., Greene Co. Medical Society----Cedarville, 1892
Stewart, Wm. D., Toledo Medical Association----Toledo, 1887
Stewart, Thos. H., Trumbull Co. Med. Society----Church Hill, 1877
Stewart, Robt. W., Academy of Medicine----Cincinnati, 1892
STEPHENS, E. B., Warren Co. Medical Society----Lebanon, 1853
Stephenson, Y., Brown County Medical Society--Georgetown, 1892
Stevenson, George W., Cuyahoga Co. Med. Society-Cleveland, 1892

Stevens, E. S., Warren Co. Medical Society----------Lebanon, 1886
Stillman, F. L., Academy of Medicine----------Columbus, 1895
STILLWELL, THOS., Sandusky Co. Medical Society-Fremont, 1857
Stinson, Chas. H----------Newark, 1894
Storey, Wm., Erie County Medical Society----------Castalia, 1884
Stockton, Geo., Academy of Medicine----------Columbus, 1895
STOCKSTILL, J. N. (Clarke County)----------New Carlisle, 1857
Stricker, L., Academy of Medicine----------Cincinnati, 1895
Sudhoff, Geo. F., Academy of Medicine----------Cincinnati, 1892
Sutton, H. T., Musk. County Medical Society------Zanesville, 1894
SWENEY, R. L----------Marion, 1859
Sykora, J., Cuyahoga County Medical Society----Cleveland, 1892
Taft, Jonathan, Academy of Medicine----------Cincinnati, 1892
Taggart, H. D., Summit County Medical Society--------Akron, 1892
Talley, C. F----------Hyattsville, 1895
Tangeman, C. W., Academy of Medicine----------Cincinnatl, 1888
Taylor, Wm. H., Academy of Medicine ----------Cincinnati, 1874
Taylor, Clovis M.----------Columbus, 1894
Telfair, Geo. M. (Clinton County)----------Bloomington, 1884
Templeton, A. M., Muskingum Co. Medical Society-Zanesville, 1892
Templeton, B. F., Muskingum Co. Medical Society-Zanesville, 1892
Thomas, Frank W., Marion County Medical Society---Marion, 1884
Thompson, C E., Champaign Co. Med. Soc---No. Lewisburgh, 1896
Thompson, F. E., Morrow County Medical Society---Marengo, 1895
Thompson, J. A., Academy of Medicine----------Cincinnati, 1892
Thompson, S. R., Tuscarawas Co. Medical Society-Uhrichsville, 1892
Thorn, S. S., Toledo Medical Association----------Toledo, 1873
Thorner, Max., Academy of Medicine----------Cincinnati, 1892
Thrasher, A. B., Academy of Medicine----------Cincinnati, 1876
Tichenor, E. J., Warren County Medical Society-----Lebanon, 1869
Titus, A., Hempstead M. A. of M----------Portsmouth, 1888
Titlow, Benatta D., Clarke County Medical Society-Springfield, 1892
Tobey, Henry A., Toledo Medical Ass'n---State Hosp., Toledo, 1878
Todd, Fred. A., Toledo Med. Association-State Hosp., Toledo, 1892
Todd, J. H., Wayne County Medical Society---------Wooster, 1892
Tower, B. M----------Conneaut, 1893

Tracy, Jas. L., Toledo Medical Association——Toledo, 1892
Trimble, C. E., Crawford County Medical Society——Crestline, 1892
Trimble, R. T., Clinton County Medical Society—New Vienna, 1881
Trout, J. Frances——Lancaster, 1895
Trush, J., Academy of Medicine——Cincinnati, 1892
Tuckerman, L. B., Cuyahoga Co. Medical Society—Cleveland, 1891
Tydings, O., Piqua Soc. Clin. Med——Piqua, 1892
Uhler, H. L., Marion County Medical Society——Marion, 1895
Upson, Henry S., Cuyahoga Co. Medical Society——Cleveland, 1888
Vail, D. T., Academy of Medicine——Cincinnati, 1892
VANDERVOORT, J. W., Warren Co. Med. Soc.—Harveysburg, 1864
Van Pelt, Chas. L., Toledo Medical Association——Toledo, 1887
Van Nette, Wesley, Crawford Co. Medical Society——Poplar, 1892
VANNATA, E. (Muskingum County)——Fultonham, 1855
Vigor, F. A. (Fayette County)——New Dover, 1884
Vorhes, B. C.——Lee, 1895
Vorhies, Elmer E——Cambridge, 1894
Waggoner, Joseph, Portage County Medical Society—Ravenna, 1870
Wagner, Henry P., N. W. O. M. A.——Delphos, 1892
Wagenhals, F. W., Columbus Medical Club——Columbus, 1885
Walker, Alonzo B., Union Medical Society——Canton, 1882
Ward, Wadsworth A., Ashtabula Co. Med. Society.—Conneaut, 1880
Warner, Frank, Academy of Medicine——Columbus, 1884
Warner, C. J., N. C. O. M. S——Congress, 1892
Ward, Clarence S., Trumbull Co. Medical Society——Warren, 1875
Ward, Orin W——Duncan's Falls, 1894
Waters, Geo. M., Columbus Acad. of Medicine——Columbus, 1896
Watson, G. N., Cuyahoga County Medical Society—Cleveland, 1892
WEAVER, J. M., Montgomery Co. Medical Society—Dayton, 1865
Weber, Wm. C., Cuyahoga County Medical Society—Cleveland, 1889
Webster, J. V., Belmont County Medical Society——Flushing, 1890
Weed, Theo. A——Cleveland, 1880
Welch, Absalom J., Fayette Co. Medical Society—Mt. Sterling, 1890
Wenner, R. J., Cleveland Medical Society——Cleveland, 1896
Wenning, W. H., Academy of Medicine——Cincinnati, 1892
West, T. J., N. W. O. M. A——Tiffin, 1875

West, J. P., Belmont County Medical Society--------Bellaire, 1892
Whittaker, J. F., Jefferson Co. Medical Society-Bloomingdale, 1892
Whitmer, J. E----------Millersburg, 1892
Whitaker, H. W., Central Ohio Medical Society----Columbus, 1895
Whittaker, John T., Academy of Medicine----Cincinnati, 1871
White, G. M., Academy of Medicine----------Columbus, 1888
Wilcox, S. S., Academy of Medicine----------Columbus, 1895
Wilson, D. C----------Ironton, 1872
Wilson, E. J.----------Columbus, 1895
Wilson, J. L., Highland County Medical Society---Greenfield, 1871
Willson, C. H., Pike County Medical Society----------Idaho, 1895
WILLSON, WM. H. (Adams County ----------Greenfield, 1865
Williams, Brady O., Eastern Ohio Med. Soc.---Martin's Ferry, 1891
Williams, W. E., Hempstead Academy of Medicine---Jackson, 1895
Willard, G. P., N. W. O. M. A----------Tiffin, 1875
Williamson, A. M., Montgomery Co. Medical Society--Dayton, 1892
Williams, T. B., Cuyahoga Co. Medical Society-----Cleveland, 1886
Winders, Frank, Hancock and N. W. O----------Columbus, 1896
Wirth, R., Academy of Medicine----------Columbus, 1886
Wirt, Wm. E., Cuyahoga Co. Medical Society------Cleveland, 1891
Wiseman, Osbourne M., Muskingum Co. Med. So--Zanesville, 1894
Withrow, J. M., Academy of Medicine----------Cincinnati, 1892
Wolfe, A. C., Academy of Medicine----------Columbus, 1896
Wood, John S----------Cleveland, Collinwood, 1880
Wood, W. H., Jefferson Co. Medical Society--------Smithfield, 1892
WOODS, JOS. T., Toledo Medical Association----Toledo, 1862
Woods, Elizabeth, Toledo Medical Association---------Toledo, 1892
Woodruff, E. W----------Columbus, 1895
Woodruff, L., C. O. M. S----------Alton, 1867
Woodbridge, Jno. E., Mahoning Co. Med. Society, Cleveland, 1886
Woodworth, W. H., Col. of P. and S., Baltimore----Delaware, 1895
Wright, S. St. J., Summit Co. Medical Society-----Tallmadge, 1880
Wright, J. A., N. W. O. M. A----------Toledo, 1892
Wright, Thos. M., Miami County M. C. Soc----------Troy, 1891
Wright, Jno. H----------New Lexington, 1894
Wright, Jno. W---------- ----------Columbus, 1885

Wylie, J. L., Brown County Medical Society----------Ripley, 1872
Yarnall, F. H., Hildreth District Medical Soc----W. Lafayette, 1892
Yingling, G. S. (withdrawn), N. W. O. M. A----------Tiffin, 1892
Young, D. Howard, Erie County Medical Society-----Chicago, 1892
Zenner, Phillip, Academy of Medicine----------Cincinnati, 1882
Zinke, E. G., Academy of Medicine----------Cincinnati, 1892
Zimmerman, H. A----------Youngstown, 1892
Zopfi, W. J., Hancock County Medical Society--------Findlay, 1891

☞See Non-Resident Permanent Members, page 439.

DELEGATE MEMBERS.

Culbertson, J. C., Academy of Medicine----------Cincinnati
Cable, Thomas B., Shelby Co. Medical Society----------Pemberton
Cass, Edward, Muskingum Co. Medical Society----------Dresden
Durbin, P. M., Sandusky Co. Medical Society----------Woodville
Frame, Jno. A., Columbus Academy of Medicine----------Athens
Good, Harmon, Montgomery Co. Medical Society----Sulphur Grove
Harding, B. F., N. C. O. M. A.----------Mansfield
Halderman, S. S., H. M. A. of M.----------Portsmouth
Harbour, C. W.----------Anna
Rouse, Wm. L.----------Paintersville
Slager, J. L., N. W. O. M. S.----------Paulding
Thompson, Wm. E., Belmont Co. Medical Society----St. Clairsville
Whitten, Wm. F.----------Columbus
Wilson, E. F.----------Columbus

HONORARY MEMBERS.

Roberts Bartholow, M. D.---Philadelphia, Pa., 1879
James F. Hibbard, M. D.---Richmond, Ind., 1871
E. W. Jenks, M. D.---Detroit, Mich., 1875
John Kerr, M. D.---Canton, China, 1875
N. Senn, M. D.---Chicago, 1890
Victor A. Vaughan, M. D.---Ann Arbor, Mich., 1889
Donald Maclean, M. D.---Detroit, Mich., 1894
Hunter Robb, M. D. (Permanent Member, 1895)---Cleveland, 1894
P. Beeman, M. D.---Sidney, 1872
J. C. Blackburn, M. D.---Covington, Ky., 1857
M. H. Harding, M. D.---Lawrenceburg, Ind., 1854
R. E. Haughton, M. D.---Richmond, Ind., 1863
E. L. Hill, M. D---Oxford, 1856
J. M. Kitchen, M. D.---Indianapolis, Ind., 1866
W. B. Lyons, M. D.---Huntington, Ind., 1866
J. F. Noyes, M. D.---Detroit, Mich., 1875
E. D. Safford, M. D.---Parkersburg, W. Va., 1870
J. M. Stevenson, M. D.---Pittsburgh, Pa., 1866
R. S. Sutton, M. D.---Pittsburgh, Pa., 1884
Judson Daland, M. D.---Philadelphia, Pa., 1895

NON-RESIDENT PERMANENT MEMBERS.

Elisha Griswold----------Sharon, Pa.
C. E. Kurtz----------4460 Berkley Ave., Chicago, Ill.
W. E. Rice----------Tuscola, Ill.
Jno. M. Goodson----------Sterling, Kansas.
H. B. Nunemacker----------44th and Market Sts., Philadelphia, Pa.
Jas. L. Williams----------Indianapolis, Ind.
C. T. Murphy----------New York City.
Leonard Freeman----------Denver, Col.

AUXILIARY SOCIETIES.

Academy of Medicine of Cincinnati.

AUXILIARY SINCE 1875. ANNUAL MEETING IN MARCH.

S. C. AYRES----------President.
R. B. HALL----------1st Vice-President.
C. R. HOLMES----------2d Vice-President.
W. E. SCHENCK----------Recording Secretary.
R. W. STEWART----------Treasurer.
J. A. JOHNSTON----------Corres'g Secretary.
J. C. CULBERTSON----------Librarian.

RESIDENT MEMBERS.

Abbott, C. N.,
Abel, S. V.,
Adams, E. P.,
Adams, J. M.,
Agin, C. C.,
Albers, G. H.,
Albers, W. H.,
Allen, G. M.,
Allen, J. R.,
Allen, S. E.,
Armstrong, C. L.,
Atherton, A.,
Aub, Joseph,
Averdick, J. A.,
Ayres, S. C.,
Bacharach, F.,
Bailey, W W.,
Bange, T.,
Batchelor, Emma J.,
Bauer, A. E.,
Baum, H. C.,
Beebe, B. F.,
Bell, C. A.,
Bell, W. H.,
Belt, C.,
Berkley, J. M.,
Bettman, A.,
Bettman, H. M.,
Bindley, J. H.,
Birchard, A. D.,
Blackburn, J. C.,
Blau, J. Jr,
Bonifield, C. L.,
Booth, Georgia A.,
Bower, S. W.,
Boylan, J. E.,
Brady, M. B.,
Bramble, D. D.,
Brent, C. P.,
Brooks, Cora,
Brown, A. M.,
Brown, Hattie C.,
Brown, J. E.,
Brown, T. L.,
Bruehl, G.,
Buchanan, Henrietta,
Buckner, J. H.,
Budd, G. A.,
Burhans, C. A.,
Buttemiller, J. C.,
Buxbaum, A. J. F.,
Cadwallader, J. C.,
Caldwell, C. E.,
Caldwell, F.,
Caldwell, J. S.,
Cameron, O. L.,
Campbell, W. H.,
Carothers, R.,
Carpenter, Julia W.,
Carr, L. C.,
Carrick, A. L.,
Carroll, Thos.,
Carson, A. I.,
Casello, J. B.,
Cassatt, M.,
Castle, C H.,
Chase, H. S.,
Cilley, J. L.,
Clancy, D. W.,
Clark, H. A.,
Clarke, B. F.,
Cleveland, J. L,

Coffman, T. R.,
Colter, L. S.,
Conley, Cornelia C.,
Conner, G.,
Conner, P. S.,
Cook, H. J.,
Corboy, C.,
Cross, F.,
Culbertson, J. C.,
Cullen, G. I.,
Curry, F. C.,
Dandridge, N. P.,
Danziger, L.,
Davis, Clark,
Davis, J. L.,
DeBeck, D.,
DeCourcy, W. E.,
Delbitt, ——,
Denman, L. M.,
DeRoo, B. C.,
De Witt, W. H.,
Dickey, Eliza J.,
Dodd, C. W.,
Dodds, J. W.,
Doerler, A.,
Dorschug, F. P.,
Dowling, F.,
Draper, F. W.,
Drury, A. G.,
Dulaney, J. J.,
Dunham, H. K.,
Dunham, I. S.,
Dunham, W. H.,
Dunlap, W. T.,
Dunlap, W. T.,
Egor, J. W.,
Eichberg, Jos.,
Eichberg, J. H.,
Ellis, A. E.,
Ellis, A. N.,
Ellis, C.,
Ellsbury, Clara M.,
Ernst, A. B.,
Evans, A. E.,
Evans, C. S.,
Everts, O.,
Fackler, G. A.,
Falls, W. H.,
Fennel, O.,
Fernberg, M.,
Fibbe, J. H.,
Fischer, P.,
Fitzpatrick, T. V.,
Fleming, W. L.,
Fletcher, M. H.,
Fogel, L. J.,
Forchheimer, F.
Forchheimer, W.,
Fortmeyer, C. A.,
Fraid, N. I.,
Freiberg, A. H.,
French, E. H.,
French, J. M.,
Freudenberger, H.,
Gavin, W. J.,
Gillette, A. E.,
Glaser, Bertha L.,
Goddard, F. T.,
Goddard, K.,
Good, P. W.,
Goode, B. P.,
Goode, G. H.,
Goode, S. B.,
Goodin, W. I.,
Goodman, E.,
Goves, F. A.,
Grafft, J. G..
Grandjean, A.,
Green, M. D.,
Greenleaf, C. R.,
Greiwe, J. E.,
Grimm, A.,
Gunkel, H. C.,
Haight, J. B.,
Haile, G. W.,
Haines, W. D.,
Hall, R. B.,
Harff, B. G.,
Harmon, F. W.,
Harris, J.,
Hart, T. P.,
Hayes, T. W.,
Hazard, J. H.,
Heady, J. F.,
Hierdink, J. W.,
Heflebower, R. C.,
Heise, O. N.,
Held, H. F.,
Helfferich, E. V.,
Hellman, F. F.,
Hendley, F.,
Hilkowitz, W.,
Hinckley, H. D.,
Hoeltge, A. H.,
Holmes, C. R.,
Holt, O. P.,
Hoppe, H. H ,
Hottendorf, L. P.,
Huffman, C. E.,
Hussey, S. H.,
Hutchings, R. K.,
Hyndman, J. G.,
Ingram, R.,
Isham, A. B.,
Jacobs, E.,
Johnson, F. W.,
Johnson, J. A.,
Johnstone, A. W.,
Jones, G. E.,
Jones, I. D.,
Jones, I. D.,
Jones, R.,
Jones, W. E.,
Joseph, L.,
Judkins, C. P.,
Judkins, Wm.,
Juettner, O.,
Juler, H. C.,
Junkermann, G. S.,
Kallock, P. C.,
Kammann, A. A.,
Kattenhorn, H.,
Kearns, C.,
Kebler, F.,
Keck, P. A.,
Kiely, W. E.,
Kelly, W. H.,
Kemper, A. C.,
Keyser, J.,
Khnon, E.,
King, A. L.,
King, J. R.,
Klein, A. W.,
Knight, A. L.,
Knight, W.,
Knox, J. T.,
Koehler, M.,
Kramer, F.,
Kramer, S. P.,
Krieger, G. L.,
Krouse, L. J.,
Kunz, J.,
Landis, J. H.,
Landy, E.,
Langdon, F. W.,
Langdon, W. C.,
LeFevre, E. B.,
Lemmon, J. F.,
Lewis, R. F.,
Lewis, W. E.,
Locke, C. F.,
Long, W. H.,

Longfellow, R. C.,
Lougbead, F.,
Lyle, B. F.,
Mackenzie, J. C.,
Maloney, J. J.,
Marcus, J.,
Marcus, J. E.,
Marsh, F. O.,
Martin, H.,
McAllister, Kate A.,
McCollom, E. O..
McKechnie, J. B.,
McKee, E. S.,
McMechan, J. C.,
McMilan, W.
Medaris, L. H.,
Metz, C. L.,
Miles, A. J.,
Miller, B. F.,
Mills, O. S.,
Mitchell, E. W.,
Mitchell, G. S.,
Molloy, J. J.,
Murnan, J. R.,
Murphy, J. W.,
Muscroft, C. S., Jr.,
Mussey, L.,
Mussey, W. L.,
Neff, W.,
Neufarth, L.,
Newbury, J. L.,
Nickles, S.,
Niedermeyer, H.,
Norton, O. D.,
Oelschlaegel, F.,
Oliver, J. C.,
Orr, G. B.,
Osborne, Mary,
Palmer, C. D.,
Parker, A. J.,
Phelps, A. V.,
Phythian, C. T.,
Pieck, C. G.,
Pierce, C. T.,
Poole, A.,
Porter, W. D.,
Prendergast, J. W.,
Prior, Amelia J.,
Prugh, G. W.,
Querner, L. A.,
Rachford, B. K.,
Ransohoff, J.,
Ratterman, B. J.,
Ravogli, A.,
Reamy, T. A.,
Reed, C. A. L.,
Reed, J. G.,
Remelin, R.,
Rennicker, A. P.,
Richards, W. D.,
Ricketts, B. M.,
Ricketts, E.,
Ricketts, J.,
Riley, Estella M.,
Roads, W. M.,
Rosenbaum, M.,
Rothenberg, S.,
Row, G. S.,
Ryan, G. W.,
Saffin, W.,
Sandfeld, B.,
Sattler, E. E.,
Sattler, R.,
Sayres, K. B.,
Schenck, W. E.,
Schmidt, T.,
Schoolfield, C. B.,
Schoolfield, D.,
Schumard, C. E.,
Schwab, E.,
Schwab, L.,
Schwagmeyer, C. A ,
Scott., J. W.,
Scott, N. I.,
Seely, W. W.,
Shaller, J. M.,
Shaw, W. E.,
Shields, E. H.,
Silverman, J.,
Singleton, J. B.,
Sittel, F.,
Smith, C. W.,
Smith, W. O.,
Solar, F. A.,
Southgate, F.,
Southgate, Louise,
Sparger, H. V.,
Speidel, E. G. C.,
Spence, C. J.,
Stapleford, A. D.,
Stanton, B.,
Stark, S.,
Stark, O. W.,
Stephen, J. E.,
Stevenson, J. W.,
Stewart, R W ,
Straehley, E. O.,
Stricker, L.,
Sudhoff, G. F.,
Taft, J.,
Taft, W.,
Taggart, T. E.,
Tangeman, C. W.,
Tate, M.,
Tauber, B.,
Taylor, W. F.,
Taylor, W. H..
Terrill, J. C.,
Thompson, J. A.,
Thorner, M.,
Thornton, R. H ,
Thrasher, A. B.,
Thrasher, A. W.,
Thuman, G.,
Tingley, W. S.,
Topmoeller, J. M ,
Trush, J.,
Tucker, A. A.,
Twitchell, G. B..
Vail, D. T.,
Van Meter, C. B.,
Van Zant, C. B.,
Vattier, J. L.,
Wagner, J. B.,
Walker, A. R.,
Walker, E. W.,
Walker, J. P.,
Watson, H.,
Watson, J.,
Weaver, W. B.,
Wendel, H. C.,
Wenning, W. H.,
Werner, G. E.,
Whallon, R. H.,
White, R. A.,
White, T. P.,
Whittaker, J. T.,
Wiggins, J.,
Williams, J. G.,
Williams, W. M.,
Wilson, J. B ,
Winnes, T. D.,
Withrow, J. M.,
Wolfstein, D. I ,
Woodward, A. J.,
Woodward, W. R.,
Wright, Emily,
Young, D. S.,
Zenner, P ,
Zinke, E. G.,
Zipperlein, A.

Adams County Medical Society.

AUXILIARY SINCE 1888. ANNUAL MEETING IN JUNE.

(Reported in 1894.)

COLEMAN, W. K.----------President.
STEVENSON, R. A.----------Vice-President.
BUNN, JAS. W.----------Secretary.
KIRKPATRICK, O. B.----------Treasurer.

MEMBERS.

Berry, J. S., Peebles.
Bunn, Jas. W., West Union.
Coleman, W. K., West Union.
Corboy, C. S., Winchester.
Foster, E. M., Manchester.
Gaston, E.M. (Censor), Tranquility.
Grimes, L. B., Stouts.
Guthrie, J.W. (Censor), Manchester.
Kirkpatrick, O. B., Cherry Fork.
Hughes, W. J. (Censor), Moscow.
Lockhart, J. M.. Eckmansville.
Robe, O. W., Youngsville.
Sproull, O. T., Bentonville.
Stevenson, R. A., Manchester.
Wittenmyer, J. M., Peebles.

Allen County Medical Society.

AUXILIARY SINCE 1887. ANNUAL MEETING IN MAY.

MATTESON, D. E. ----------President.
BENNETT, H. C.----------Vice-President.
MCCALL, E. E.----------Secretary.
RUDY, A. S.----------Treasurer.

MEMBERS.

Bates, F. L., Lima.
Bennett, H. C., Ft. Wayne, Ind.
Brooks, P. H., Lima.
Burton, E. G., Westminster.
Collins, Chas., Lima.
Goeble, Miss Anna M., Lima.
Harper, W. H., Lima.
Henderson, — W. Cairo.
Herrmann, S. S., Lima.
Hiner, S. B., Lima.
Hitchcock, Salathiel A., Elida.
Hover, W. E., Lima.
Huntley, J. H., Lima.
Kahle, R. D., Lima.
Kahle, A. W., Lima.
Kreps. R. L., Westminster.
Landick, L. F., Lima.
McCall, E. E., Lima.
Matteson, D. E., Lima.
Mumaugh. Shelby, Lima.
Rousch, Wm., Spencerville.
Rudy, A. S., Lima.
Steiner, D. W., Lima.
Stueber, F. G., Lima.
Stueber, L. J., Lima.
Terwillager, T. R , Lima.
Vail, J. B., Lima.
Van Notl, W. B., Lima.
Weadock, T. M., Lima.

Ashland County Medical Society.

AUXILIARY SINCE 1865. ANNUAL MEETING IN MAY.

COWIN, J. P. (Deceased July 9, 1895).
CLARK, P. H.----Vice-President.
KINNAMAN, R. C.----Secretary.
SAMPSEL, D. S.----Treasurer.

MEMBERS.

Ash, L. B., Ashland.
Buchan, J. R., Chicago, Ill.
Buchanan, J. H., Ashland.
Campbell, John, Galion.
Clark, P. H., Ashland.
Cowin, F., Ashland.
Crowell, David, Savannah.
Davis, L. Z. (Censor), Jeromesville.
Francis, D. R., Mansfield.
Fuller, A. B., Londonville.
Gregg, George, Rowe.
Hunter, Thomas S., Ashland.
Hutchinson, J., Mifflin.
Irwin, J. W., Magnetic Springs.
Johnson, J., Perrysville.
Kendig, E. V. (Censor), Haysville.
Kinnaman, A. S., Cleveland.
Kinnaman, C. L., Cleveland.
Kinnaman, R. C., Ashland.
McCarty, O. C., Ashland.
Myers, Benj., Ashland.
Parr, G. W., Perrysville.
Sacket, C. D., Ashland.
Sampsel, D. S., Jr., Ashland.
Sampsel, W. H., Ashland.
Sattler, J. M., Ashland.
Sherick, A. L., Ashland.
Stoll, J. H., Wooster.
Wirt, Wm. H., Londonville.
Willson, J. H., Pittsburg.

Ashtabula, Lake and Geauga Medical Society.

AUXILIARY SINCE 1896. REORGANIZED 1896.

ANNUAL MEETING IN AUGUST.

DICKSON, J. A----President.
WHITSEY, H. B----Secretary.

MEMBERS.

Aldrich, D. B., Harbor.
Anderson, G. S., Andover.
Baker, C. D., Conneaut.
Battles, Mary Miller, Ashtabula.
Booth, Wm. H., Ashtabula.
Burrows, S. S., Geneva.
Case, F. D., Ashtabula.
Dickson, J. A., Ashtabula.
Dorman, H. W., Harbor.
Ellsworth, W. O., Austinburg.
Flower, Wallace R., Ashtabula.
Fox, C. L, Kingsville.
Gilchrist, W. L., Ashtabula.
Graham, J. W., W. Williamsfield.
Grover, C. T., Orwell.
Hopkins, A. W., Ashtabula.
King, Wm. S., Ashtabula.
Merriam, E. D., Conneaut.
Palmer, D. G., Geneva.
Pomeroy, A. L., Windsor.
Quagle, C. H., Madison.
Rathbone, A. G., S. New Lyme.
Sargant, F. S., Cherry Valley.
Shatto, H. J., Colebrook.
Tibbets, F. E., Geneva.
Tower, B. W., Conneaut.
Upson, F. W., Conneaut.
Ward, W. A., Conneaut.
Webster, E. M., Kingsville.
Webster, George E., Kingsville.
Weiss, W. S., Rock Creek.
Whitsey, H. B., Ashtabula.

Belmont County Medical Society.

AUXILIARY SINCE 1887. ANNUAL MEETING IN DECEMBER.

WORKMAN, J. C. ---------- President.
KÖRNER, A. H. ---------- Vice-President.
COLVILLE, G. H. ---------- Treasurer.
HUSTON, W. O. ---------- Secretary.

MEMBERS.

Alexander, E. C., St. Clairsville.
Black, O. J., Bridgeport.
Blackford, J. M., Martins Ferry.
Boone, D. W., Bellaire.
Boone, J. S. (Censor), Powhatan.
Clarke, J. A., Glencoe.
Colville, G. H., Harrisville.
Cooper, J. W., Bellaire.
Cope, I. G., Cope.
Cope, E. C., Cope.
Divan, A. W., Martins Ferry.
Douglass, R. A., Barnhill.
Ebert, Wm. F., Martins Ferry.
Ely, J. S., Barnesville.
Estep, Wm., Loydsville.
Frame, C. A., Cambridge, Guernsey Co.
Gregg, S. T., Belmont.
Hawthorn, Ellis W., Coleraine.
Heinlein, A. J., Bridgeport.
Hervey, W. E., Martins Ferry.
Hewettson, A. H. (Censor), St. Clairsville.
Hobson, J. A. (Censor), Flushing.
Hogan, J. M., Martins Ferry.
Howels, J. O., Bridgeport.
Huston, W. O., Bellaire.
Kerns, J. F. W., Bellaire.
Korrell, A. H., Armstrongs Mill.
Körner, H. H., Armstrongs Mill.
Kurtz, C. E., Chicago.
Long, D. W., Bellaire.
McClellan, J. S., Bellaire.
McGlenn, J. A., Mt. Pleasant.
Piper, Wm., Bellaire.
Piersol, Jos., Bellaire.
Pumphrey, R. J., Flushing.
Riggs, E. W., Powhatan.
Shuttleworth, W. B., Martins Ferry
Smith, H. M., Clarington, Monroe Co.
Snowd, G. T., Glencoe.
Spence, J. A., 960 Liberty Avenue, Pittsburg.
Thompson, W. E., St. Clairsville.
Walker, D. S., St. Clairsville.
Webster, J. B., Flushing.
Wellons, J. S., Barnesville.
Wellons, G. L., Barnesville.
West, S. L., St. Clairsville.
West, J. P., Bellaire.
Williams, B. O. (Censor), Martins Ferry.
Workman, J. C., Uniontown.

Brown County Medical Society.

AUXILIARY SINCE 1892. ANNUAL MEETING IN MAY.

GORDON, THOS. W. ---------- President.
DIXON, W. A. ---------- Vice-President.
ELLSBERRY, A. M. ---------- Treasurer.
MARKLEY, L. ---------- Secretary.

Champaign County Medical Society.

AUXILIARY SINCE 1879. ANNUAL MEETING IN APRIL.

MOSGROVE, S. M.----------President.
HUNT, H. B.----------Vice-President.
LUDLOW, E. W.----------Secretary.
LONGFELLOW, J. V.----------Librarian.
HENDERSON, ROBT.----------Treasurer.

MEMBERS.

Ayers, J. H., Urbana.
Carter, J. S., Urbana.
Clarke, J. H., Mechanicsburg.
Emmonds, D. R., No. Lewisburg.
Henderson, Robt., Urbana.
Hunt, H. B., St Paris.
Keyser, I. N., Urbana.
Longfellow, J. V., Urbana.
Ludlow, E. W., Urbana.
McLaughlin, C. M., Erie.
Mehan, J. F., Urbana.
Moses, T. W., Urbana.
Mosgrove, J. M., Urbana.
Mosgrove, S. M., Urbana.
Mosgrove, W. A., Urbana.
Musson, J. J., St. Paris.
O'Brien, D., Urbana.
Pearce, H. C., Urbana.
Pearce, H. M., Urbana.
Pickering, G. W., Urbana.
Thompson, C. E., No. Lewisburg.
Thompson, F. S., Cravon.
Williams, A. L., No. Lewisburg.
Wolfe, J. H., King's Creek.

Clarke County Medical Society.

AUXILIARY SINCE 1877. ANNUAL MEETING IN MAY.

(Reported 1894.)

KENNAN, J. G.----------President.
TITLOW, B. G.----------First Vice-President.
ROGERS, J. H.----------Second Vice-President.
SMITH, W. A.----------Secretary and Treasurer.

MEMBERS.

Baldwin, Henry, Springfield.
Bell, R. L., Springfield.
Brinkman, Geo. J., Springfield.
Bruberbaker, G. F., Springfield.
Buckingham, J. M., Springfield.
Carroll, T. M., Springfield.
Collins, M. H., South Charleston.
Davis, Ben, New Carlisle.
Deane, J. W., Donnellsville.
Dugan, J. P., Springfield.
Gilbert, I. K., New Carlisle.
Harris, E. C., Springfield.
Hibble, D. W., Enon.
Hirons, J. B., Tremont.
Hulick, J. W., Springfield.
Kay, C. H., Springfield.
Kay, I., Springfield.
Kennan, J. G., Springfield.
Kuglor, J. G., New Carlisle.
McClintock, A., North Moorfield.
Myers, J. E., Springfield.
Myers, Noah, Springfield.
Nelson, J. W., Springfield.
Reade, T. M., Springfield.
Reigle, Frank L., Tremont.
Rogers, J. H., Springfield.
Seys, H. H., Springfield.
Smith, W. A., Springfield.
Smith, E. H., Vienna.
Titlow, B. G., Springfield.
Vance, A. H., Springfield.

Clermont County Medical Society.

AUXILIARY SINCE 1854. ANNUAL MEETING IN OCTOBER.

COMBS, J. S. ——President.
REDRON, ISAAC——Vice-President.
MARSH, M. I. ——Secretary.
KENNEDY, P.——Treasurer.

MEMBERS.

Abbott, Julius D., Bethel.
Anderson, F. W., Newtonville.
Anderson, W. S., Newtonville.
Andrews, J. H., Goshen.
Ashburn, Allen W., Batavia.
Ashburn, Percy M., Batavia.
Barnes, N. A., New Hope.
Belt, R. C., Milford.
Bennett, C. A., Withamsville.
Bishop, L. W., Batavia.
Bishop, L. W., Jr., Loveland.
Bradley, N. E., Felicity.
Brown, E. M., Amelia.
Brown, H. M., Hillsboro.
Bryan, A. S., Point Pleasant.
Canter, S. A., Pt. Isabel.
Carmichael, W. A., Loveland.
Coombs, J. S., Owensville.
Curry, F C.. Milford.
Dickinson, T. F., Columbia.
Donham, H. L., Mt. Washington.
Ellsbury, Solon, Bethel.
Ellsbury, W. S., Bethel.
Erdman, R. F., New Richmond.
Fitzpatrick, T. V., Cincinnati.
Formorin, J. L., Marathon.
Hill, F. E., Neville.
Hill, N. S., Neville.
Hines, George L., Williamsburg.
Hulick, J. W., Springfield.
Ireton, E. C., Marathon.
Kennedy, Charles, Laurel.
Love, Wesley, Higginsport.
McKee, A. B., Felicity.
McKibben, C. T., Moscow.
McKibben, Jas., Moscow.
McKibben, Wm., Moscow.
Marsh, M. I., Owenville.
Medoris, L. H., Fairmount.
Mendenhall, J. W., Loveland.
Mitchell, T. A., Owensville.
Moore, E. L., Amelia.
Morris, A., Goshen.
Mullen, T. J., New Richmond.
Redron, Isaac, Williamsburg.
Scott, Thomas L., New Hope.
Scoville, J. L., Lebanon.
Shrofe, W. J., Hamersville.
Thomson, W. E., Bethel.
Tucker, W. E., Felicity.
Walton, C. C. (Unknown).

Clinton County Medical Society.

AUXILIARY SINCE 1879. ANNUAL MEETING IN MAY.

WISE, G. W ——President.
AUSTIN, G. M ——Treasurer.
BRIGGS, E——Secretary.

MEMBERS.

Adams, C. F., Sabina.
Austin, G. M., Wilmington.
Briggs, E., Wilmington.
Conard, G. R., New Vienna.
Donaldson, J. F., Port William.
Garland, Z. T., Clarksville.
Lightner, S. B., Sabina.
McFadden, John, Centerville.
McKenzie, J. B., Cincinnati.
Martin, A. J., Wilmington.
Moon, S. B., Wilmington.
Mory, D. B., Wilmington.
Mory, D. B., Jr., Wilmington.
Quinn, A. T., Wilmington.
Quinn, T. C., New Vienna.
Savage, T. J., (Green) Bowersv'le.
Scott, W., Martinsville.
Sheppard, W. W., Wilmington.
Smith, L., Lumberton.
Snook, C., Clarksville.
Srofe, W. E., Cuba.
Telfair, G. M., Bloomington.
Tribbett, C. A., Westboro.
Trimble, R. T., New Vienna.
Van Winkle, N. B., Blanchester.
Van Winkle, B. L., Blanchester.
Van Gundy, E., Midland.
Ward, C., Clarksville.
Whistle, H., New Antioch.
Wilkinson, M., Sabina.
Wire, G. W., Wilmington.

Cleveland Medical Society.

AUXILIARY 1896. ANNUAL MEETING IN JANUARY.

COOK, JOSEPH E.----President.
UPSON, GEO. D.----First Vice-President.
STRAIGHT, H. S.----Second Vice-President.
CLARK, FRANK S.----Recording Secretary.
FEIL, G. R.----Corresponding Secretary.
TAYLOR, F. C.----Treasurer.
CROWE, E. P.----Librarian.

RESIDENT MEMBERS.

Acker, H.F., 1363 Woodland Hills.
Albl, M., 1386 Broadway.
Aldrich, C. J., 637 Central.
Allen, D. P., 278 Prospect.
Arey, C. O., 50 Euclid.
Arnold, G. D., 1015 Cedar.
Anderson, C. A., 387 Prospect.
Armstrong, J. F., 643 Pearl.
Ashmun, G. C., 794 Republic.
Bailey, Robt., 468 Willson.
Baker, A. R., 122 Euclid.
Baker, L. K., 1257 Euclid.
Bard, I. W., 1341 Lorain.
Bard, L. A., 97 Merchant.
Barger, W. T., 2795 Superior
Baldwin, A. M., 1108 St. Clair.
Bauer, Herman, 1460 Willson.
Beachler, G. F., 349 Erie.
Belt, J. H., 1434 Willson.
Boesger, M. A., 862 Lorain.
Boggs, Jessie, 1257 Euclid.
Bookwalter, W. S., 900 Fairmount.
Borts, M., 975 Woodland.
Brainard, H. C., 89 Euclid.
Brashear, B. B., 211 Prospect.
Breck, T. B., 1234 Cedar.
Brockett, A. J., 32 Hawthorne.
Brokaw, W. F., 636 Scovill.

Brown, A. I., 128 Franklin.
Bruner, W. E., 514 New England Bldg.
Buechner, W. H., 298 Prospect.
Buel, J. J., 604 Pearl.
Bunts, F. E., 380 Pearl.
Burdick, H. J., 519 Cedar.
Burke, T. A., 377 Pearl.
Butler, G. O., 975 Woodland.
Byrne, P. J., Viaduct and Pearl.
Campbell, A. D., 1960 St. Clair.
Campbell, O. B., 993 Cedar.
Capener, W. H., 415 Case.
Carey, M. J., 847 St. Clair.
Carpenter, E. G., 615 Society for Savings.
Case, G. B., 36 Kendall Bldg.
Chadwick, L. S., 2267½ Euclid.
Chalfant, C. M., 414 Pearl.
Childs, L. W., 1871 Pearl.
Clapp, H. T., 122 Euclid.
Clark, E. A., 122 Euclid.
Clark, Frank S., 337 Prospect.
Coates, B. O., 956 Willson.
Cook, A. J., 2220 Willson.
Cook, J. E., 128 Franklin.
Corlett, W. T., 553 Euclid.
Cotton, C. E., 350 Jennings.
Craft, J., 64 Streator.
Crile, G. W., 380 Pearl
Crowe, E. P., 1938 Superior.
Cutler, E. J., The Arcade.
Darby, J. E., 850 Doan.
Davidson, E. M., 106 Euclid.
Deucher, J. A., 1065 Pearl.
Dickenson, J., 32 Sibley.
Diemert, J. A., 137 Woodland.
Durstine, F. H., Willson, corner Quimby.
Dutton, C. F., 122 Euclid.
Ehret, G. A., 38 Public Square.
Elliott, A. S., 2794 Euclid.
Erwin, J. J., 1617 Cedar.
Esch, W. J., 681 St. Clair.
Eyer, Alvin, 89 Euclid.
Eyman, H. C., Cleveland State Hospital.
Farnsworth, G. B., 1905 Pearl.
Feil, G. R., 864 Woodland.
Fletcher, H. M., 56 Ontario.
Fortlage, H., 451 Pearl.
Foshay, P. M., 514 New England Bldg.
Franke, F. C., 701 Woodland.
Fraser, G. O., 202 Cedar.
Friedman, I., 465 St. Clair.
Frost, Geo. M., 137 Streator.
Fry, R. D., 176 Euclid.
Gallagher, J. V., 254 Pearl.
Gentsch, Chas., 167 Franklin.
George, O. E., Pearl and Clark.
Gilbert, J. A., 392 Pearl.
Goetz, E. P., 964½ Payne.
Goetz, F. E., Woodland and Linden.
Goff, H. Neville, 1049 E. Madison.
Goodwin, E. M., ————
Gordon, O. F., Box 70.
Grossman, D. W., Alabama, cor. Superior.
Gunn, R. D. A., 160 Oakdale.
Hamann, C. A., 282 Prospect.
Hanson, D. S., 1419 Broadway.
Havlicek, F. J., 1059 Lorain.
Heath, J. A., 10 Marquette.
Heimlich, D., 521 Woodland.
Herbkersman, F. H., 1829 Broadway.
Herrick, H. J., 365 Erie.
Herrick, H. J., Jr., 365 Erie.
Herrick, W. H., 176 Euclid.
Hess, J. L., 1544 Superior.
Hill, E. W., 57 Wade Park.
Hobson, J. F., 429 Prospect.
Hoover, C. F., 282 Prospect.
Hosick, W. A., 1613 Woodland.
House, A. F., 1059 Superior.
Howard, W. T., W. R. U. Medical College.
Humiston, W. H., 122 Euclid.
Hutchins, Fannie C., 252 Sawtell.
Ingersoll, J. M., 50 Euclid.
Ingram, J. A., 739 Detroit.
Isham, J. S., 1682 Superior.
James, W. S., 1519½ Lorain.
Johnson, W. D., 1111 Lorain.
Kaestlen, S. E., 615 Lorain.
Kehres, E. J., 1426 St. Clair.
Kelley, S. W., 837 Superior.
Kerr, I. J., Hough and Willson.
Kinnaman, C. L., 1474 Cedar.
Kinnaman, A. S., 941½ Woodland.
Kinsey, G. N., 739 Detroit.
Knowlton, W. A., 530 Jennings.
Kofron, J. V., 1560 Broadway
Kolb, M. G., 1007 Pearl.
Krebs, P. H., 1007 Pearl.
Lee, H. J., 71 Tilden.

Leick, Geo. F., 503 Prospect.
Lewis, J. M., 176 Euclid.
Lincoln, Wm., 333 Prospect.
Lincoln, W. R., 1597 Euclid.
Loewenthal, M., Perry and Woodland.
Long, H. C., 1194 Payne.
Lower, W. E., 380 Pearl.
Lowman, J. H., 441 Prospect.
Lucas, W. H., 862 Lorain.
Lucas, V. C., 1158 Pearl.
Luck, H. C., 122 Euclid.
MacTaggart, R. G., 436 Pearl.
McGee, J. B., 1405 Woodland.
McQuiston, H., 19 Walker.
Mabley, H. C., 350 Amesbury.
Marvin, A. H., 106 Euclid.
Mason, A. W., 172 Sterling.
Miller, Amanda H., 997 Pearl.
Millikin, B. L., 278 Prospect.
Mustard, J. W., 7 Harkness Blk.
Nevison, W. H., 278 Prospect.
Nungesser, J. J., 97 Lyman.
Nydegger, R., 166 Jennings.
Ohlmacher A. P., 745 Republic.
Orwig, G. A., 1108 Woodland.
Oster, L. W., 1234 St. Clair.
Paisley, A. C., 1145 Lorain.
Parke, M. J., 337 Prospect.
Parker, C. B., 425 Euclid.
Pav, Anton, 1133 Broadway.
Payne, F. A., 619½ Willson.
Pelton, R. P., 2018 Detroit.
Perkins, D. S., 1273 Euclid.
Perrier, J., 1014 Willson.
Peskind, A., 1354 Willson.
Pollock, R., 747 Hough.
Powell, H. H., 467 Prospect.
Preble, E., 89 Euclid.
Propper, Max, 359 Forest.
Quirk, H. W., 2 Harkness Block.
Reed, A. W., 1194 Payne.
Riegelhaupt, S., 761 Woodland.
Riley, J. A., 1314 Cedar.
Robb, Hunter, 1342 Euclid.
Rogers, H. W., 10 Vestry.
Rosenberg, E., 1419 Woodland.
Rosenwasser, M., 722 Woodland.
Ruedy, R. E., 772 Willson.
Russell, G. C., 312 Prospect.
Sadler, L. A., 959 Lorain.
Sager, B. E., 243 Crawford.
Sawyer, J. P., 122 Euclid.
Sawyer, P. H., 64 Streator.
Scott, N. Stone, 531 Prospect.
Searl, W. A., Cleveland State Hosp.
Sherman, H. G., 29 Euclid.
Shirkey, U. S. L., 1357 Lorain.
Siegelstein, L. E., 299 Woodland.
Sipher, J. N., 76 Euclid.
Skeel, R. A., 1160 Pearl.
Smith, C. W., 122 Euclid.
Smith, D. B., Case Bldg.
Smith, E. A., 843 Woodland.
Smith, F. K., 312 Prospect.
Smith, G. S., 1273 Euclid.
Smith, L. J., 138 Salisbury.
Snow, L. B., 76 Euclid.
Spenzer, J. G., 370 Central.
Spenzer, P. I., 370 Central.
Spurney, A. F., 864 Woodland.
Steiner, A., 766 Woodland.
Stevenson, G. W., 1439 Woodland.
Stewart, G. N., Med. Col., Erie and St. Clair.
Stoskopf, Geo, 176 Euclid.
Stotter, J., 620 Lorain.
Straight, H. S., 323 Hickox Bldg.
Stovering, F. A., 344 Pearl.
Strong, Jamin.
Stuart, Chas. C., 102 Jennings.
Sullivan, E. W., 1329 Superior.
Sykora, J., 1449 Broadway.
Taylor, F. C., 128 Franklin.
Thomas, J. J., Hough and Marcy.
Thomas, O. T., 874 Scranton.
Thompson, F. L., 1198 Pearl.
Townsend, C., 975 Woodland.
Towslee, L. G., 554 E. Prospect.
Travis, D. L., 1194 Payne.
Tuckerman, L. B., 298 Central.
Turner, C. A., 307 Pearl.
Upson, G. D., 302 Hickox Bldg.
Upson, H. S., 514 New England Bldg.
Vance, R. A.
Watson, G. N., 1875 Pearl.
Weber, W. C., 405 Prospect.
Welty, C. F., The Hollenden.
Wenner, R. J., 1059 Superior.
White, D. K., 2 Bolton.
Williams, T. B., 145 Quincy.
Wimer, J. S., 302 Viaduct.
Wirt, W. E., 122 Euclid.
Woodward, R. M., M. H. S., U. S. Marine Hospital.
Wooldridge, C. W., 933½ Woodland.
Wruble, S., 1200 Pearl.
Yost, O., New England Bldg.

NON-RESIDENT MEMBERS.

Arner, A. L., Jefferson.
Amidon, H. N., Painesville.
Bauer, M. M., Lake.
Beach, Addison M., Niles.
Berneike, R. A., Collinwood.
Booth, Chas. C., Youngstown.
Bourn, E. L., Brecksville.
Boyd, Jas. P., Akron.
Brant, A. C., Canton.
Breck, Theodore, Brecksville.
Bricker, W. R., Shelby.
Bunce, W. C., Oberlin.
Burrows, S.S., Institution for Blind, Columbus.
Caldwell, Wm., Fremont.
Campbell, A. B., Canal Fulton.
Carlisle, I. C., Glenville.
Chamberlin, W. E., Akron
Clark, A. M., Youngstown.
Cleaver, J. V., Akron.
Cox, S. S., Lorain.
Craig, J. Harvey, Mansfield.
Dickson, J. S., Ashtabula.
Eldridge, F. A., Berlin Heights.
Ellsworth, W. O., Austinburg.
Everhard, N. S., Wadsworth.
Falor, O. N., N. Baltimore.
Feister, H. A., Jr., Newton Falls.
Foultz, A. E., 156 S. Broadway, Akron.
Fox, C. L., Kingsville.
Fraunfelter, James, Canton.
Freidrick, M.
Gamble, R. V., New London.
Gardner, D. S., Massillon.
Gardner, J. F., Massillon.
Gilchrist, Wm. Lewis, 111 Center St., Ashtabula.
Grubaugh, Robt. F., Mansfield
Hall, H. L., Elyria.
Handler, S., 670 N. St. Paul, Rochester, N. Y.
Hanna, D., Oberlin.
Harmon, J. D., Warren.
Hawley, E. N., Norwalk.
Haynes, J. T., Soldiers' Home, Sandusky.
Hine, G. W., Berlin Heights.
Hitchcock, E., Akron.
Hobson, J. F., Lakewood.
Holliday, E. R., Wellington.
Hollis, C. W., Chippewa Lake.
Hoover, A., Akron.
Hopkins, A. W., Ashtabula.
Howard, A. B., Cuyahoga Falls.
Humphrey, C. M., 1013 S. Main, Akron.
Hutton, C. F., Minerva.
Hyde, A. F., 31 N. Broadway, Shelby.
Ingersoll, A. J., Mentor.
Jackson, T. W., Akron.
Jacobs, H. A., Akron.
Jacobs, W. C., Akron.
Jamieson, G. C, Oberlin.
Jenks, W. O., Nottingham.
Johnson, Wm. H., Collins.
Jones, Dallas K., Canal Fulton.
Kinnaman, R. C., Ashland.
Lathrop, G. C., Dover.
Leininger, Augustus, Canton.
Leitch, A. J., Niles.
Leonard, W. W., Akron.
Leroy, B. R., Chagrin Falls.
Linden, W. E., South Brooklyn.
Loney, D. W., Olena.
Loughead, B. B., Akron.
Love, M. J., Bloomingville.
Lowe, J. W., Mentor.
McConkey, W. J., 110 Walnut St. Canton.
McLean, W. F., Elyria.
McMichael, J. C., Glenville.
Marchand, J. F., Canton.
Maynard, O. T., Elyria.
Merriman, D. J., Painesville.
Merz, Chas. H., Sandusky.
Miller, M. F., Wadsworth.
Miner, A. G., Niles.
Muenchehofe, C.W. F., 616 Bloomfield St., Hoboken, N. Y.
Myers, I. A., Shelby.
Noble, C. D., Oberlin.
Noland, I. N., Independence.
Oviatt, W. H., Canal Dover.
Page, H. M., Hiram.
Palmer, D. G., Geneva.
Peck, G A., Youngstown.
Pipes, Jno. R., Crestline.
Pomeroy, F. S., Chardon.
Rabe, J. W., Akron.
Reed, T. J., Massillon.
Reed, T. T., Massillon.
Rice, C. M., Newton Falls.

Rogers, J. H., Louisville.
Rhu, A., Marion.
Sabin, T. M., Warren.
Schilling, Chas. E , Canton.
Seidell, R. R., Bedford.
Shane, G. A., Waynesburgh.
Smith, J. T., Collinwood.
Snow, Chas. A., Garrettsville.
Snyder, G. N., La Grange.
Stamm, M., Fremont.
Starr, G. L., Hudson.
Stoll, C. W., Dover.
Tate, T. E., Barberton.
Tidball, A. H., Garrettsville.
Tower, B. M., Conneaut.
Tuttle, Carl, Berlin Heights.
Underwood, E. S., Akron.
Upson, F. W., Conneaut.
Walker, A. B., Canton.
Ward, C. S., Warren.
Ward, W. A., Conneaut.
Welch, H. E., Youngstown.
Whelan, R. E., Youngstown.
White, W. W., Ravenna.
Williams, C. C , Niles.
Woesner, W. E., Huron.
Wood, J. S., Collinwood.
Wright, E. St. J., Tallmadge.
Wuchter, G. H., Wadsworth.
Young, D. H., Chicago.
Zimmerman, H. O., Youngstown.

Columbus Academy of Medicine.

AUXILIARY 1894.

J. E. BROWN ..... President.
D. L. MOORE ..... Vice-President.
H. M. PLATTER ..... Secretary.
F. W. BLAKE ..... Treasurer.

COLUMBUS.

Allen, H. P., 73 E. State.
Anderson, J. R., 1038½ N. High.
Baldwin, J. F., 112 N. Fourth.
Barnhill, J. U., 246 E. State.
Bartley, M. A., 656 W. Broad.
Beery, J. E., W. Broad.
Bethauser, C. M., 51 E. Town.
Blackburn, M. E., N. High.
Blake, F. W., 33 S. Fourth.
Bleile, A. M., King.
Bowen, A. H., 195 E. State.
Brown, J. E., 235 E. Town.
Brun, C. A., Fulton and Wash.
Burgoyne, J. A., E. Broad.
Carter, C. C., E. Long.
Clark, C. F., 188 E. State.
Clouse, G. M., 948 Mt. Vernon.
Cole, W. U., 282 W. State.
Coleman, N. R., 264 E. Town.
Cooperrider, C. A., 372 S. Fourth.

COLUMBUS.

Davenport, A. B., Miller.
Dennison, A. N., Fourth & Long.
Deuschle, W. D., Central Insane Asylum.
Dick, W. L., 10 E. Spring.
Dixon, M. T., 145 E. Beck.
Dunham, J. M., 222 E. Town.
Dumm, S. C., 1499 N. High.
Early, L. M., 1042 E. Long.
Emerick, E. J., 1126 Neil.
Fraker, H. C., 1128 E. Main.
Frame, J. A., E. State.
Frankenberg, O., 310 E. Rich.
Fullerton, E. B., 129 E. State.
Gilliam, D. Tod, 50 N. Fourth.
Gilliam, E. M., 50 N. Fourth.
Gordon, J. L., Jr., N. High.
Griffin, A. E., 810 Mt. Vernon.
Hamilton, C. S., 142 E. Long.
Hamilton, W. D., 142 E. Long.

COLUMBUS.

Hatton, E. M., 56 S. Fourth, Y. M. C. A. Buillding.
Hatton, E. M., S. Third.
Havens, W. V., 162 Hamilton.
Hendrixson, H., 11 W. Goodale.
Henry, R. H., 755 N. High.
Herbst, E., 77 E. State.
Herrick, Prof. C. L., Granville, O. (Honorary.)
Hoover, T. C., 249 E. State (Censor).
Johnston, A. M., 32 Lexington.
Jones, H. S., E. State.
Kahn, Louis, 342 S. Fourth.
Kerr, J. M., 10 E. Spring.
Kinsman, D. N., "The Normandie."
Landon, C. P., 1217 E. Long.
Lawrence, J. C., 582 N. High.
Lawrence, J. C., N. Fourth.
Lawrence, F. F., 103 N. Fourth.
Lindsay, S. C., Insane Asylum.
Linebaugh, J. A., 742 S. High.
Lippitt, B. F., W. Broad.
Loving, S., 229 E. State.
McClure, J. A., W. Fifth.
Magruder, J. J., 109 N. Grant.
Marshall, G. M., E. Broad.
Means, C. S., 669 N. High.
Moore, D. L., E. Broad.
Moore, H. M. W., 243 E. Town.
Nash, W. H. H., 545 E. Long.
Park, Jas., Ohio Penitentiary.
Park, James, W. Broad.
Parker, C. A., E. Main.
Platter, H. M., E. Gay.
Probst, C. O., State House.

COLUMBUS.

Rankin, T. W., E. Broad.
Rankin, T. W., 137 E. State.
Rauschkolb, Chas., Fourth and Mound.
Rauschkolb, Chas., S. Fourth.
Reed, R. H., E. Broad.
Richardson, A. B., Central Insane Asylum.
Rogers, W. K., 188 E. State.
Rowles, W. T., 64 N. Fourth.
Rukenbrod, E. P., Imbecile Asylum.
Schueller, J. B., S. High.
Schwallie, W. A., Insane Asylum.
Stein, G. S., S. High.
Steward, S. H., S. Gift.
Stillman, F. L., E. Broad.
Stockton, Geo., Insane Asylum.
Stout, J. A., E. Long.
Strittmatter, L., N. Washington.
Taylor, C. M., N. High.
Taylor, S. P., E. Rich.
Turney, C. F., Mt. Vernon.
Van Possen, J. A., N. High.
Warner, F., Park Hotel.
Waters, G. M., N. High.
Whitaker, H. W., E. State.
White, G. M., E. Spring.
Whitehead, H., W. Broad.
Whitten, W. F., E. Rich.
Wilcox, S. S., E. State.
Wilson, E. F., E. State.
Wilson, E. J., E. Broad.
Wirth, R., S. High.
Wissinger, T. K., E. Main.
Wolfe, A. C., N. High.
Youmans, T. G., Broad and Third.

Crawford County Medical Society.

AUXILIARY 1893. ANNUAL MEETING IN APRIL.

BEVINGTON, H. S.----President.
KEMP, LUCIA----Secretary and Treasurer.

MEMBERS.

Crestline.
eesville.
yrus.
., Sulphur Springs.
, Bucyrus.
, Crestline.
evada.
., Bucyrus.
J. F., Bucyrus.
Tiro.
[illegible]
[illegible]
H. [illegible]
Kemp, Lucia, Bucyrus.

Krider, J. B., Bucyrus.
McLead, C. D., Chatfield.
Manderville, C. M., Galion.
Moses, J. B., Crestline.
Noblet, C. H., Bucyrus.
Noblet, F. K., Bucyrus.
Ott, C. W. G., Winchester.
Ridgway, N. B., Galion.
Rininger, E. M., New Washington.
Sexaur, C. F., Chatfield.
ble, C. E., Crestline.
Natta, H. L., Seal.
Nette, Wesley, Poplar.
ue, F. M., Sulphur Springs.
irtue, D. B., Lykens.

Cuyahoga County Medical Society.

AUXILIARY SINCE 1879. ANNUAL MEETING IN APRIL.

CAMPBELL, O. B. ---------- President.
RUSSELL, G. C. ---------- First Vice-President.
WEBER, W. C. ---------- Second Vice-President.
OSWALD, B. F. ---------- Secretary.
CHADWICK, L. S. ---------- Treasurer.

MEMBERS.

Albl, M. A., 1386 Broadway.
Aldrich, C. J. (Censor), 637 Central.
Allen, D. P., 278 Prospect.
Arms, C. C., 104 Euclid.
Ashmum, G. C., 794 Republic.
Baker, A. R., 122 Euclid.
Baker, C., 553 Kinsman.
Boggs, Miss J., 1257 Euclid.
Brashear, B. B., 211 Prospect.
Brockett, A. J., 32 Hawthorne.
Brooks, M. L. (Hon.), 289 Prospect.
Bunts, F. E., 380 Pearl.
Burdick, H. J., 519 Cedar.
Burton, E. D., E. Cleveland.
Campbell, O. B., 993 Cedar.
Carlisle, I. W., Glenville, Ohio.
Carpenter, E. G., 29 Euclid.
Chadwick, L. S., 1824 Euclid.
Clark, F. S., 331 Prospect.
Cook, A. J., 2220 Willson.
Corlett, W. T. (Censor), 333 Prospect.
Cotton, C. E., 350 Jennings.
Crile, G. W., 380 Pearl.
Cushing, E. F., 967 Prospect.
Cushing, H. K., 967 Prospect.
Dutton, C. F., 122 Euclid.
Eyman, H. C., Cleveland State Hospital.
Fraser, J. M., 581 Erie.
Gentsch, C., 167 Frankland.
Gordon, O. F., 712 Prospect.
Handerson, H. E., 444 Dunham.
Hanson, D. S., 1419 Broadway.
Hart, A. G., 102 Jennings.
Herrick, H. J., 367 Erie.

Herrick, H. B., 2228 Euclid.
Hintzelman, C., 86 Randall.
Hobson, J. F., Lakewood, O.
Holliday, B. W., 520 Prospect.
Holliday, W. W., 2588 Broadway.
Hoover, C. F., 97 Huron.
Howard, W. T., Jr., W. R.U. Medical College.
Humiston, W. H., 122 Euclid.
Isom, J. F., 1167 Prospect.
James, W. S., 1519½ Lorain.
Jenks, W. D., Nottingham, O.
Jones, J. D., 1631 Havard.
Kaestlen, S. E., 615 Lorain.
Kelley, S. W., 837 Superior.
Knowlton, W. A., 530 Jennings.
Kolb, M. G., 1007 Pearl.
Krause, B., 132 Woodland.
Lee, H. J., 71 Tilden.
Leick, G. F., 503 Prospect.
Lowman, J. H., 441 Prospect.
McGee, J. B., 1405 Woodland.
McQuiston, H., 19 Walker.
Marvin, A. H., 106 Euclid.
Millikin, B. L., 278 Prospect.
Morton, F. J., 959 Lorain.
Norton, F. J., 19 Miles.
Ohlmacher, A. P., 745 Republic.
Oster, L. W., 1234 St. Clair.
Oswald, B. F., 2010 Detroit.
Parker, C. B., 425 Euclid.
Payne, F. A., 619½ Willson.
Perkins, D. S., 1273 Euclid.
Perrier, J., 1014 Willson.
Peskind, A., 1354 Willson.
Powell, H. H., 467 Prospect.
Quirk, H. W., 1232 Euclid.
Rogers, H. W., 10 Vestry.
Rosenwasser, M., 722 Woodland.
Russell, G. C., 312 Prospect.
Sawyer, P. H., 54 Streator.
Sawyer, J. P. (Censor), 122 Euclid.
Scott, N. S., 531 Prospect.
Scott, W. J., 531 Prospect.
Sherman, H. G., 29 Euclid.
Sihler, C., 879 Scranton.
Sipher, J. N., 76 Euclid.
Skeel, R. E., 1160 Pearl.
Smith, C. W., 122 Euclid.
Smith, F. K., 733 Prospect.
Snow, L. B., 158 Lincoln.
Somerville, G. H., 2487 Broadway.
Spencer, J. G., 370 Central.
Stevenson, G. W., 1439 Woodland.
Stillmann, G. B., 1318 Cedar.
Straight, H. S., 323 Hickox Bldg.
Sykora, J., 449 Broadway.
Thomas, O. T., 282 Prospect.
Tuckerman, L. B., 298 Central.
Upson, H. S., 341 Prospect.
Watson, G. N., 1875 Pearl.
Weber, G. C. E., 161 Prospect.
Weber, W. C., 405 Prospect.
Weidenthal, N., 300 Forest.
Wood, A., 1270 Clark.

Eastern Ohio Medical Association.

AUXILIARY SINCE 1894. ANNUAL MEETING IN APRIL.

COLVILLE, G. A ---------- President.
CALHOUN, W. M ---------- Vice-President.
WOOD, W. H ---------- " "
LONG, D. W ---------- " "
MCGAVERN, S. B ---------- " "
FLOYD, J. C. M ---------- Secretary and Treasurer.

MEMBERS.

Andrews, O. P., East Liverpool.
Andrews, R., East Liverpool.
Bailey, W. N., East Liverpool.
Baird, M. W., Irondale.
Barkhurst, S. O., Smithfield.
Blazer, H. E., Salineville.
Boone, D. W., Bellaire.
Boone, E. L., Powhatan Pt.
Boone, J. S., Powhatan Pt.
Bozman, H. E., New Alexandria.
Calhoun, W. M., East Liverpool.
Clark, W. R., East Liverpool.
Collins, B. F., Columbus.
Colville, G. A., Harrisville.
Cooper, J. W., Bellaire.
Elliott, A. A., Steubenville.
Elliott, G. B. C., Empire.
Floyd, J. C. M., Steubenville.
Gardner, J. W., East Liverpool.
Gregg, M., Knoxville.
Groves, A. C., Fewette.
Hewettson, A. H., St. Clairsville.
Hobbs, W. A., East Liverpool.
Hobson, J. A., Flushing.
Hogan, J. M., Martin's Ferry.
Hoge, W. A., Portland Station.
Holland, A. B., Wellsville.
Howells, J. O., Bridgeport.
Huston, W. O., Bellaire.
Kerns, J. W., Bellaire.
Korner, A. H., Alledonia.
Laughlin, R., Steubenville.
Lemmon, L. A., Calcutta.
Lindsay, J. A., Salineville.
Long, D. W., Bellaire.
McClellan, J. S., Bellaire.
McConnel, S. M., Wellsville.
McCoy, J. J., Steubenville.
McCullough, J. A., Steubenville.
McFarland, W. S., Wellsville.
McGavran, S. B., Cadiz.
McGlenn, J. A., Mt. Pleasant.
Marquis, T. B., Lisbon.
Martin, J. W., Unionport.
Marshall, R. J., East Liverpool.
Miller, J. E., Richmond.
Nelson, H. W. Steubenville.
Nevin, W. C., New Lisbon.
Norris, W. T., East Liverpool.
Ogden, C. B., East Liverpool.
Osborne, J. J., Mt. Pleasant.
Parke, B. R., Wellsville.
Pearce, E., Steubenville.
Piper, J. Frank, Warnock.
Piper, W. O., Bellaire.
Pumphrey, R. J., Flushing.
Purfiance, J. F., Steubenville.
Rigge, E. N., Powhatan Pt.
Saint, J. N., East Liverpool.
Snyder, D. J., Scio.
Spence, W. S., Germano.
Stokes, W. H., Toronto.
West, J. P., Bellaire.
West, S. L., St. Clairsville.
Whitaker, J. F., Bloomingdale.
White, D. K., removed to Cleveland.
Williams, B. O., Martin's Ferry.
Williams, L. O., East Liverpool.
Wood, W. H., Smithfield.
Wycoff, G. R., East Springfield.

Erie County Medical Society.

AUXILIARY SINCE 1877. ANNUAL MEETING IN APRIL.

COOK, A. F ---------- President.
SYKES, R. D ---------- Vice-President.
HUGHS, F. M ---------- 2d " "
GRAEFE, Chas ---------- Secretary.

MEMBERS.

Buckingham, E. V., Chicago.
Bush, Wm. H., Sandusky.
Calvin, James H., Huron.
Cook, A. F., Sandusky.
de la Barre, Paul, Port Clinton.
Deemer, Horace E., Castalia.
Elwood, Stanley, Sandusky.
Esch, J. P., Huron.
Gawne, A. J., Waco, Texas.
Graefe, Charles, Sandusky.
Graefe, Wm., Sandusky.
Goodsell, E. J., Norwalk.
Haynes, J. T., Soldiers' Home, Sandusky.
Heiter, Carl, Sandusky.
Hessel, A. A., Bellevue.
Hughs, Dr. F. M., Sandusky.
Klein, J. J., Kelley's Island.
Kreider, C. L., Monroeville.
Love, Maro J., Bloomingville.
Merrill, A. E., Sandusky.
Merz, C. H., Sandusky.
Osborn, A. L., Norwalk.
Perkins, C. E., Lakeside.
Quiglev, R. L., Vermillion.
Sears, O. T., Put-in Bay.
Storey, Wm., Castalia.
Sykes, R. D., Chicago, Ill.
Walters, Ralph L., Lakeside.
Young, D. L., Chicago.

East Liverpool Medical Association.

AUXILIARY IN 1895.

CLARK, W. R.---President.
WILLIAMS, L. O.---Vice-President.
TOOT, J. E.---Secretary.

Andrews, R., East Liverpool.
Andrews, O. P., " "
Bailey, W. N., " "
Bean, —— " "
Clark, W. R., " "
Calhoun, Wm., " "
Hathaway, R. L., " "
Hobbs, W. A., " "
Ikert, J. J., " "
Ikert, G. P., " "
Laughlin, F. M., East Liverpool.
Marshall, R. J., " "
McVey, G. C., " "
Norris, W. T., " "
Ogden, C. B., " "
Rogers, L., " "
Stennard, Julia I., " "
Taylor, Wm., " "
Toot, J. E., " "
Williams, L. O., " "

Fayette County Medical Society.

AUXILIARY SINCE 1891. ANNUAL MEETING IN DECEMBER.

KELLAR, B. T.---President.
BLAKELY, G. W.---Vice-President.
CLARKE, J. N.---Treasurer.
BOGGESS, E. M.---Secretary.

MEMBERS.

Adams, C. W., Milledgeville.
Blakely, G W., Washington C. H.
Black, F. M., Washington C. H.
Boggess, E. M., Washington C. H.
Clark, J. N., Madison Mills.
Foster, C. A., Washington C. H.
Holdren, G. W., Bloomingburg.
Howell, L. P., Washington C. H.
Howell, J. M., Washington C. H.
Hughey, J. M., Chillicothe.
Ireland, S. A., Washington C. H.
Ireland, W. E., Washington C. H.
Kellar, B. F., Bloomingburg.
McFadden, L. M., Staunton.
May, J. B., New Holland.
Marchant, Grant, Milledgeville.
Rowe, —— Jeffersonville.
Scurlock, W. S., New Holland.
Teeters, C. A. Jeffersonville.
Tulton, Scott, Washington C. H.

Gallia County Medical Society.

AUXILIARY SINCE 1895.

ALCORN, E. G ---------- President.
PARKER, E. W ---------- Vice-President.
SAUNS, H. V ---------- Secretary.
TURNER, L. B ---------- Treasurer.

MEMBERS.

Alcorn, J. B., Gallipolis.
Alcorn, E. G., Gallipolis.
Bean, L. C., Gallipolis.
Cromley, F. A., Gallipolis.
Dustin, J. B., Vinton.
Eakins, J., Patriot.
Ely, Chas., Cheshire.
Ewing, G. K., Ewington.
Gerlach, H. P., Crown City.
Hamilton, H. M., Vinton.
Hanson, J. T., Gallipolis.
Howell, D. A., Gallipolis.
Jacobs, R. D., Rio Grande.
Maupin, D. G., Crown City.
Miller, Wm., Thurman.
Newsome, C. E., Gallipolis.
Parker, E. W., Gallipolis.
Parker, G. C., Gallipolis.
Rife, C. A., Kyger.
Sauns, H. V., Gallipolis.
Strausbaugh, J. C., Vinton.
Turner, L. B., Bidwell.
Vanden, G. W., Gallipolis.
Webster, D. J., Sand Fork.
Williams, W. S., Mercerville.

Greene County Medical Society.

AUXILIARY SINCE 1888. ANNUAL MEETING IN JUNE.

BRUNDAGE, L. H. ---------- President.
ROUSH, W. L. ---------- Treasurer.
MESSENGER, A. C. ---------- Secretary.

MEMBERS.

Anderson, George, Alpha.
Baldwin, I. W., Yellow Springs.
Brundage, A. H., Xenia.
Brundage, L. H., Xenia.
Cunningham, S. A., Cedarville.
Donaldson, J. F., Port William.
Edwards, J. D., Xenia.
Findley, W. H., Xenia.
Galloway, Wm. A., Xenia.
Galloway, C. M., Xenia.
Harris, J. M., Yellow Springs.
Humphrey, W. H., Yellow Springs.
Jones, L. M., Jamestown.
Kent, F. M., Spring Valley.
Lindsey, F. T., Xenia.
McClellan, B. R., Xenia.
McClellan, H. R., Xenia.
Marquart, O. M., Osborn.
Marquardt, C. C., Yellow Springs.
Messenger, A. C., Xenia.
Ogan, F. W., Jamestown.
Roush, W. L., Paintersville.
Sewell, S. G., New Burlington.
Smith, Ray, Spring Valley.
Spahr, C. H., Jamestown.
Spahr, David, Clifton.
Stewart, J. O., Cedarville.
Stewart, J. M., Cedarville.
Trehearne, T. W., Zimmerman.
Wilson, S. S., Xenia.

Hancock County Medical Society.

AUXILIARY SINCE 1891.

WILLIAMSON, M. S.---------President.
MCLACHLAN, N. L.---------Vice-President.
HUGHES, D. C.---------Treasurer.
POWELL, J. E.---------Secretary.
WINDERS, FRANK---------Asst. Secretary.

MEMBERS.

Baker, J. P., Findlay.
Brayton, W. G., Fostoria.
Carrothers, M. M., Findlay.
Cram, C. E., VanLoo.
Elwell, W. M., Van Buren.
Entriken, F. B., Findlay.
Entriken, F. W., Findlay.
Ewing, M. J., Findlay.
Firmin, F. W., Findlay.
Guise, J. M., Findlay.
Howell, J. A., Findlay.
Hughes, D. C., Findlay.
Hurd, A., Findlay.
Kimmell, J. A., Findlay.
Koogle, Alice K., Findlay.
Lown, M. M., Findlay.
McLachlan, N. L., Findlay.
McLeod, J. R., Findlay.
Magee, W. C., Houcktown, O.
Martin, J. C., Findlay.
Miller, G. W., Findlay.
Powell, J. E., Findlay.
Saunders, O. H., W. Independence.
Schrote, J. L., VanLoo, O.
Shanley, C. M., Mt. Blanchard.
Switzer, C. C., McComb.
Vickers, H. A., Findlay.
Wilson, T. S., Findlay.
Williamson, M. S., Findlay.
Winders, Frank, Columbus.
Woods, T. E., Rawson.
Woods, L. S., Rawson.
Yost, W. N., Findlay.
Zopfi, W. J., Findlay.

Hempstead Memorial Academy of Medicine.

AUXILIARY SINCE 1885. ANNUAL MEETING IN MAY.

ANDRE, O. C.----------President.
TEACHNOR, WELLS----------Vice-President.
COTTON, D. B.,----------Treasurer.
PIXLEY, M. S.----------Secretary.

MEMBERS.

Allard, L. D., Portsmouth.
Andre, O. C., Waverly.
Burgess, W. M., Portsmouth.
Chabot, G. W., Otway.
Cotton, D. B., Portsmouth.
Cotton, Mary H., Portsmouth.
Edwards, F. M., Portsmouth.
Foster, E. M., Portsmouth.
Frizelle, J. S., Buena Vista.
Fulton, C. C., Portsmouth.
Gahm, J. L., Jackson.
Gordon, J. F., Otway.
Halderman, S. S., Portsmouth.
Hall, Lorin, Portsmouth.
Kline, P. J., Portsmouth.
Lottridge, Wm. M., Portsmouth.
McKerrihan, S. B., Portsmouth.
Marcum, L. D., Portsmouth.
Marshall, Geo. M., Columbus.
Morgan, Jno. F., Jackson.
Murphy, C. T., New York City.
Pixley, M. S., Portsmouth.
Ralston, C. O., Peebles.
Rardin, J. S., Portsmouth.
Ray, Jas. B., Portsmouth.
Sellards, A. G., Portsmouth.
Smith. W. W., Portsmouth.
Stillman, F. L. (Hon.) Columbus.
Taylor, J. L., Wheelersburg.
Teachnor, W. A., Sciotoville.
Titus, K., Portsmouth.
Vernier, Lewis, Portsmouth.
Warwick, J. B., Lucasville.
Warwick, C. M., Lucasville.
Williams, Wm. E., Jackson.

Highland County Medical Society.

AUXILIARY SINCE 1877. ANNUAL MEETING IN APRIL.

ROBERDS, T. W----------President.

MEMBERS.

Beam, A. H., Sugar-tree Ridge.
Beeson, H. A., Leesburg.
Brown, H. M., Hillsboro.
Chancy, S. F., Pricetown.
Conrad, G. R., New Vienna.
Duvall, T. W., Lynchburg.
Glasgow, J. A., Bell.
Glenn, W. W., Hillsboro.
Granger, B. D., Hillsboro.
Granger, F. M., Russels.
Holmes, B. F., Hillsboro.
Holmes, R. E., Leesburg.
Hook, O. C., Marshall.
Hopkins, O. A., Martinsville.
Judkins, E. S., Highland.
Lafferty, N. B., Hillsboro.
Leatherman, J. W., New Market.
Littler, W. D., Leesburg.
McBride, D. N., Rainsboro.
McNulty, S. J., Elmville.
McNulty, J. H., East Monroe.
Mattheus, Jno. W., Buford.
Mequillett, W. L., Hillsboro.
Nelson, Lockhart, Hillsboro.

Patterson, W. S., Hillsboro.
Quinn, T. C., New Vienna.
Roberds, T. W., Bell.
Russ, H. A., Hillsboro.
Schrofe, W. E., Cuba.
Schrofe, W. J., Lynchburg.
Scott, W. T., Martinsville.
Shepherd, W. W., Hillsboro.
Thomas, F. M., Samantha.
Trimble, R. T., New Vienna.
Vance, C. E., Greenfield.
Van Winkle, N. B., Blanchester.
Wilson, F. L., Greenfield.
Wilson, J. L., Greenfield.
Wilson, M. B., Hillsboro.
Wilson, W. H., Greenfield.

Hildreth District Medical Association.

AUXILIARY SINCE 1886. REPORTED 1894.

ANNUAL MEETING IN JANUARY.

SPEAR, A. T.----------President.
McDOUGAL, J. G----------First Vice-President.
RUSK, DANIEL----------Second Vice-President.
McCURDY, S. L----------Third Vice-President.
CROSSLAND, J. C.----------Fourth Vice-President.
PATRICK, N. E----------Secretary.

MEMBERS.

Alexander, J., McConnellsville.
Axline, C. Z., Fultonham.
Axline, J. D., Shawnee.
Barcroft, W. H., Coshocton.
Bell, A. E., Zanesville.
Bingham, T. J., McConnellsville.
Brush, E. C., Zanesville.
Bugher, C. E., Caldwell.
Carr, J. G., Coshocton.
Calvin, R. A., Avondale.
Carr, E. A., Coshocton.
Cass, Edw., Dresden.
Clemson, G. W., Thornville.
Crossland, J. C., Zanesville.
Davis, M. B., Rossean.
Davis, T. J., Zanesville.
Davis, Jas., Ringgold.
Emory, G. A., Rendville.
Fassig, J. M.. Zanesville.
Folk, P., Deavertown.
Frew, W. C. (Censor), Coshocton.
Geyer, J. L., Norwich.
Gordon, P. A., Junction City.
Hays, J. D., Somerset.
Haldeman, J. S., Zanesville.
Holston, J. G. F., Zanesville.
Holden, J. L., Zanesville.
Holcomb, L. S., Pennsville.
Holland, G. H., Mt. Perry.
Humphrey, J. B., Malta.
Jones, W. T., Columbus.
Kennedy, G. L., Deavertown.
Kemmerer, F. M., Crooksville.
King, C. P., Newark.
Kyle, G. G., Granville.
Larue, F., Chandlersville.
Larimore, J., Newark.
Lenhart, C. M., Zanesville.
Lenhart, W., Columbus.
Lerone, L. W., Hebron.
Logsdon, E. C., Zanesville.
McCurdy, S. L., Dennison.
McDougal, J. G., New Lexington.
McTague, N. T., New Lexington.

Mellick, W. A., Zanesville.
Moody, I. A., Junction City.
Newton, G. A., New Straitsville.
Noyes, H. J., Mergsville.
Norman, A. M., Roseville.
O'Neil, J. M., Zanesville.
Patrick, N. E., Zanesville.
Priest, S. C., Newark.
Reamy, L. M., Zanesville.
Reed, R. Harvey, Mansfield.
Richards, A., New Lexington.
Rusk, Daniel, Malta.
Shipp, G. Linton, Newark.
Snider, J. W., New Castle.
Snyder, D. P., New Bedford.
Sheppard, H. P., Adams Mills.
Speer, A. T., Newark.
Thomas, B. A., Rushville.
Tracey, E. G., Malta.
Walker, G. W. W., Roseville.
Woodworth, O. M., Corning.
Wiseman, O. M., Zanesville.
Wright, N. (Censor), Moundsville.
Yarnell, F. H., West Lafayette.

Holmes County Medical Society.

AUXILIARY SINCE 1869. ANNUAL MEETING IN JANUARY.

GUITTARD, F. J.----------President.
OLMSTEAD, D. S.----------Secretary and Treasurer.

MEMBERS.

Bair, A. S., Winesburg.
Brigham, John G., Millersburg.
Carson, F. D., Benton.
Crump, A. A., Jr., Millersburg.
Crump, A. A., Sr., Millersburg.
Elder, W., Nashville.
Guittard, A. M., Charm.
Guittard, F. G., New Bedford.
Hoyer, A. M., Nashville.
Jones, A. L., Pictoria.
Jones, H. S., Clarks.
Jones, J. M., Pictoria.
Mast, Jacob A., Walnut Creek.
Olmstead, D. S., Millersburg.
Pomerne, Joel, Mt. Hope.
Pomerne, H. P., Berlin.
Pomerne, Lister, Berlin.
Ryder, H. D., Holmesville.
Purdy, W. E., Killbuck.
Shalliol, R., Winesburg.
Snyder, S. P., New Bedford.
Stuckey, A. C., Walnut Creek.
Whitmar, J. E., Millersburg.
Wise, S. P., Millersburg.
Wilson, T. R., Clarks.

Jefferson County Medical Society.

AUXILIARY SINCE 1859. ANNUAL MEETING IN NOVEMBER.

FISHER, B. H----------President.
ELLIOTT, A. A----------Secretary.

MEMBERS.

Blackburn, A. M., Steubenville.
Elliott, A. A., Steubenville.
Floyd, J. C. M., Steubenville.
Fisher, B. H., Steubenville.
Gregg, Melvin, Knoxville.
Nelson, H. W., Steubenville.
Pearce, E., Steubenville.
Whittaker, J. F., Bloomingdale.
Wood, W. H., Smithfield.

Lawrence County Medical Society.

AUXILIARY 1896.

GRAY, C. G.----------President.
LOWRY, J. W.----------Secretary.

MEMBERS.

Alban, D. R.
Davis, Gilman R.
Eakman, W. S.
Elsworth, E. E.
Ellsworth, L. W.
Fitch, J. W.
Gray, C. G.
Griffith, W. L.
Hudson, D. F.
Lowry, J. W.
Lowry, Clark.
McCoy, C. W.
Moxley, N. K.
Pricer, W. E.
Robinson, Alf.
Sloan, Thos.
Smith, C. T.
Stewart, Dave.
Wells, E. E.
White, J. M.
Willson, W. F.

Lorain County Medical Society.

AUXILIARY SINCE 1891.

YOUNG, FRANK ----------President.
MONOSMITH, O. B.----------Vice-President.
HUG, EDWARD V.---------- Rec. Secretary.
CAMERON, E.----------Cor. Secretary.
BAUMHARDT, A. J.----------Treasurer and Librarian.

MEMBERS.

Baumhardt, A. J., Lorain.
Cox, S. S., Lorain.
Cameron, Ewan, Lorain.
Denmark, Alex. G., Lorain.
Ernst, M., Lorain.
Garver, A. N., Lorain.
Hoffman, W. W., Lorain.
Hug, E. V., Lorain.
Madden, J. F., Elyria.
Monosmith, O. B., Lorain.
Robinson, H. P. H., Lorain.
Rockwood, C. H., Lorain.
VanTilburg, J. M., Lorain.
Young, Frank, Lorain.

Lucas County Medical Society.

AUXILIARY 1896.

McVETY, ALBERT F.----------President.
SUKER, G. F.----------Secretary.

MEMBERS.

Betts, Chas.
Bowman, D. E.
Bowman, M. H.
Emery, G.
Fella, F. J.
Forbes, S. F.
Gillette W. J.
Haag, D. E.
Heltman, E. W.
Henzler, Chas.
Heydrich, L. W.
Howe, John.
Hunt, F. O.
Kitchen, F. A.
McVety, A. F.
Meagley, F. L.
Miller, C. S.
Mills, C. H.
Minton, B. W.
Minton, F. P.
Munn, H. E.
Newton, C. Wm.
North, J.
Pooley, J. H.
Rieg, P. S.
Root, A. D.
Schnetzler, J. U.
Storz, C.
Strauss, P. H.
Suker, G. F.
Timpany, R. H.
Waddick, J. M.
Walker, R. J.
Watson, J. L.
Wickham, Wm.
Woods, J. T.
Wright, J.

Mahoning County Medical Society.

AUXILIARY SINCE 1879. ANNUAL MEETING IN OCTOBER.

CONE, J. E----------President.
WELCH, H. E----------Vice-President.
GIBSON, R. D----------Treasurer.
WHELAN, R. E----------Secretary.
MONTGOMERY, R. H----------Librarian.

MEMBERS.

Barnes, R. H., Youngstown.
Beach, A. M., Mineral Ridge.
Blott, H. E., Brier Hill.
Booth, C. C., Youngstown.
Buechner, W. H., Youngstown.
Campbell, Dan, Canfield.

Clarke, A. M., Youngstown.
Clarke, M. S., Youngstown.
Clarke, Ida, Youngstown.
Cone, J. E., Youngstown.
Cunningham, M. V., Youngstown.
Dickson, J. A., Youngstown.
Floor, C. L., Youngstown.
Gibson, Robt. D., Youngstown.
Hahn, H. H., Youngstown.
Howard, L. A.. Youngstown.
King, A. F., Youngstown.
Kotheimer, J. B., Youngstown.
McCurdy, John, Youngstown.
Montgomery, R. H., Youngstown.
Peck, Geo. S., Youngstown.
Preston, J. F., Youngstown.
Thomas, J. J., Youngstown.
Warren, A. E., Youngstown.
Welch, H. E., Youngstown.
Whelan, W. J., Youngstown.
Whelan, Ray E., Youngstown.
Williams, D. R., Youngstown.
Wilson, A. C., Youngstown.
Woodbridge, J. E., Youngstown.
Vogan, J. E., Lowellville.
Yost, J. A., Haselton.
Zimmermann, H. A., Youngstown.
Zimmerman, J. S., Youngstown.

Marion County Medical Society.

AUXILIARY SINCE 1879. ANNUAL MEETING IN JANUARY.

DENMAN, Wm. C.---President.
KING, J. I.---Vice-President.
UHLER, H. L.---Treasurer.
CHISHOLM, H.---Secretary.

MEMBERS.

Britton, S. H., Adelaide.
Crane, A. Melville, Marion.
Denman, Wm. C., Marion.
Dombaugh, Robert S., Waldo.
Hamilton, L. D., Marion.
King, J. I., Martel.
McCloud, J. J., Marion.
Maddox, D. L., Marion.
Martin, J. T., Marion.
Mouser, J. A., La Rue.
Ramroth, R., Marion.
Rhu, Auguste, Marion.
Sweney, R. L. (Hon.), Marion.
Thomas, Frank W., Marion.
Uhler, Harry L., Marion.
Weeks, Oliver W., Marion.
Weeks, Dana, Marion.
Wells, W. S., Marion.

Meigs County Medical Society.

AUXILIARY SINCE 1850. ANNUAL MEETING IN OCTOBER.

BEAN, GEO.---President.
HOFF, J. W.---Vice-President.
MULLEN, E.---Secretary.

MEMBERS.

Barton, T. H., Syracuse.
Bean, Geo., Rutland.
Day, H., Harrisonville.
Day, S., Harrisonville.
Deem, S. P., Tupper's Plains.
Hartinger, D. B., Middleport.
Hoff, J. W., Pomeroy.
Holmes, A. F., Albany.
Hysell, J. H., Pomeroy.
Knight, A. L., West Columbia, W. Va.
Miller, J. A., Chester.
Mullen, E., Pomeroy.
Pake, Jas. H., Middleport.
Petty, C. W., Hartford, W. Va.
Rathburn, D. C., Middleport.
Reed, C. R., Middleport.
Rine, E. W., Long Bottom.
Roush, L. F., New Haven, W. Va.
Russell, J. N., Huntington, W.Va.
Sayre, D. A., Hartford, W. Va.
Stanley. A. A., Rutland.
Stobert, R. E., Pomeroy.
Thomas, L. A., Middleport.
Titus, J. M , Pomeroy.
Williams, Alice D., Syracuse.

Miami County Medical Society.

(Consolidation Piqua Soc. Clin. Med. and Miami Med. Soc.)

SHELLENBERGER, C. H----------President.
GREEN, J. H----------1st Vice-President.
PEARSON, HERBERT----------2d Vice-President.
HARTMAN, S. D----------Treasurer.
LOWE, J. H----------Corresponding Secretary.
COLEMAN, W----------Secretary.

MEMBERS.

Baker, J. H., Piqua.
Bausman, A. J., Pleasant Hill.
Bausman, J. N., Pleasant Hill.
Brandon, J. P., Laura.
Coleman, W., Troy.
Counts, Chas., Troy.
Deaton, A. S. G., Albany.
Deaton, Van S., Albany.
Evans, J. R., Troy.
Frame, A., Piqua.
Funderberg, J., Fletcher.
Green, J. H., Troy.
Grosvenor, ——., Piqua.
Hartman, S. D., Tippecanoe City.
Jennings, G., West Milton.
Kessler, W. H., West Milton.
Kessler, W. S., West Milton.
Lindenberger, L. M., Troy.
Lowe, J. H., Piqua.
O'Farrall, R. M., Piqua.
Pearson, Herbert, West Milton.
Rice, W. E., Greenville.
Rhinehart, ——., Covington.
Semour, John, Troy.
Shellenberger, C. H., Piqua.
Smith, S. B., West Milton.
Smith, ——., Piqua.
Snorf, P. L., Piqua.
Sterrett, J. A., Troy.
Thompson, W. R., Troy.
Tydings, O., Piqua.
Unkefer, W. W., Piqua.
Widener, W. E.. Tippecanoe City.
Wright, T. M., Troy.

Miami Valley Medical Society.

AUXILIARY SINCE 1879. REPORTED 1894.

ANNUAL MEETING IN MAY.

TICHENOR, E. J.----------President.
THOMPSON, J. A.----------Vice-President.
CARMICHAEL, W. A.----------Treasurer.
GATCH, CON.----------Secretary.

MEMBERS.

Anderson, W. S., Newtonsville.
Anderson, F. M., Newtonsville.
Andrews, J. H., Goshen.
Astler, G. H., Cincinnati.
Becker, C. M., Cincinnati.
Belt, R. C., Milford.
Beeson, H. A., Leesburg.
Bishop, L. W., Loveland.
Blair, B. H., Lebanon.
Boylan, J. E., Cincinnati.
Bour, J. I., Cincinnati.
Briggs, E., Cuba.
Brown, Jos. E., Cincinnati.
Brown, E. M., Amelia.
Brown, Henry W., Hillsboro.
Carmichael, W. A., Loveland.
Cline, J. B., Perinsville.
Cline, Galen, Perintown.
Colter, L. S., Cincinnati.
Collins, J. B., Butlerville.
Combs, J. S., Owensville.
Conard, G. R., New Vienna.
Couden, J. F., Morrow.
Curry, F. C., Milford.
Darby, F. H., Morrow.
DeBeck, David, Cincinnati.
Euans, N. P., Miamiville.
Fitzpatrick, T. V., Cincinnati.
French, E. H, Glendale.
Frost, F. H., Lebanon.
Gatch, Con, Milford.
Goode, G. H., Cincinnati.
Graham, W. T., Lebanon.
Greenlee, W. M., Waynesville.
Hall, Rufus B, Cincinnati.
Highlands, W. H., Newtown.
Hough, C. A., Lebanon.
Johnson, W. A., Pleasant Plain.
Johnstone, A. W., Cincinnati.
Judkins, Wm., Cincinnati.
Juettner, A. F., Cincinnati.
Juettner, Otto, Cincinnati.
Knight, A. L., Madisonville.
Krieger, ——., Madisonville.
Macready, J., Monroe.
Lambright, S., South Lebanon.
Marsh, F. O. (Censor), Cincinnati.
Mitchell, T. A., Boston.
Morris, A. (Censor), Goshen.
Moss, W. F., Mainville.
Mounts, J. L. (Censor), Morrow.
Mounts, Leon, Morrow.
Mullen, F. J., New Richmond.
Murphy, A. D., Cincinnati.
Oliver, John C., Cincinnati.
Orr, G. B., Cincinnati.
Pampell, L., Pleasant Plain.
Quinn, A. T., Wilmington.
Quinn, T. C., New Vienna.
Reamy, T. A., Cincinnati.
Reed, Chas. A. L., Cincinnati.
Richardson, J. P., Bantam.
Ricketts, Edwin, Cincinnati.
Sandue, J. L., Cincinnati.
Scott, Wm., Loveland.
Scott, J. B., Cincinnati.
Scott, N. I., Norwood.
Scoville, S. S., Lebanon.
Sheppard, W. W., Hillsboro.
Shields, E., Cincinnati.
Spence, A. D., Cozaddale.
Stevens, E. B., Lebanon.
Stevens, E. S., Lebanon.
Thompson, J. A., Cincinnati.
Tufts, C. W., Hartwell.
Tichenor, E. J., Lebanon.
Tribbett, C. A., Westboro.
Trimble, R. T. (Censor), N. Vienna.
Wakefield, J. D., Loveland.
Wire, G. W., Wilmington.
Zinke, E. Gustav, Cincinnati.

Montgomery County Medical Society.

AUXILIARY SINCE 1851. ANNUAL MEETING IN JANUARY.

LICHLITER, D. C.----------President.
MARSHALL, W. C.----------Vice-President.
BAYLISS, E. B.----------Secretary.
HUMPHREYS, C. H.----------Treasurer.

MEMBERS.

Adams, P. N., Dayton.
Barrere, D. M., Dayton.
Bailey, V. M., Dayton.
Bayliss, E. B., Dayton.
Beck, J. S., Dayton.
Boone, A., Jamton P. O.
Bonner, Horace, Dayton.
Conklin, W. J., Dayton.
Corbin, Lee, Dayton.
Crum, E. C., Dayton.
Davisson, E. C., Dayton.
Dolina, J. F., Dayton.
Duckwall, F., Dayton.
Evans, G. B., Dayton.
Geyer, John, Dayton.
Goodhue, George, Dayton.
Good, Harman, Sulphur Grove.
Greene, D. W., Dayton.
Gray, F. C., Dayton.
Hecker, L. E., Dayton.
Humphreys, C. H., Dayton.
Hous, G. W., Clayton.
Jennings, E., Dayton.
Jenner, H. G., Dayton.
Jewett, H. S., Dayton.
Judy, C. S., Miamisburg.
Keever, D. C., Centerville.
Kimmell, H. S., Dayton.
King, C. W., Dayton.
Krause, L. S., West Carrollton.
Licbliter, David C., Dayton.
Marshall, W. C., Trotwood.
Moist, Abraham R., Dayton.
Myers, G. C., Dayton.
Negley, W. N., Dayton.
Pettit, R. R., Dayton.
Reeve, J. C. Jr., Dayton.
Scheibenzuber, D. A., Dayton.
Souders, Samuel, Dean P. O.
Stein, Robert, Dayton.
Weaver, J. M., Dayton.
Weaver, W. P., Miamisburg.
Williamson, A. M., Dayton.

Muskingum County Medical Society.

AUXILIARY 1894.

GEYER, J. L.----------President.
MCELROY, Z. C.----------Vice-President.
HALDEMAN, J. S.----------Vice-President.
FASSIG, J. M.----------Secretary and Treasurer.

MEMBERS.

Axline, C. Z., Fultonham.
Axline, F. A.
Bainter, M. R., Chandlersville.
Barton, T. J., Zanesville.
Bell, A. E , Zanesville.
Cass, E., Dresden.
Chappelean, H. C., Mt. Sterling.
Crider, C. L., Zanesville.
Davis, J. T., Zanesville.
Dunn, C. A., Stovertown.
Fassig, J. M., Zanesville.
Fischer, C.
Forsythe, W. D., Rix Mills.
Geyer, J. L., Norwich.
Geyer, H. R., Cincinnati.
Haldeman, J. S., Zanesville.
Henderson, P. P., Zanesville.
Hill, Anna M.
Holden, J. L., Zanesville.
Holston, J. G. F., Zanesville.
Hosick, W. R., Adamsville.
King, F. J.
Lane, G. W., Bloomfield.
Leeper, J. L.
Logsden, E. C., Zanesville.
McArthur, A. D. S , Gratiot.
McCreary, H., New Concord.
Melick, W. A., Zanesville.
Norman, O. M., Roseville.
Nye, H. S., Zanesville.
Patrick, N. E., Zanesville.
Rambo, C. M., Zanesville.
Sheppard, H. J., Adams Mills.
Squires, A. W., White Cottage.
Sutton, H. T., Zanesville.
Templeton, A. M.
Templeton, B. F.
Trout, G. B.
Walker, G. W. W., Roseville.
Warburton. G., Zanesville.
Ward, O. M.
Wiseman, O. M., Zanesville.

North-Central Ohio Medical Society.

AUXILIARY SINCE 1881. MEETINGS QUARTERLY.

McCOLLOUGH, A. H.....President.
LARIMORE, F. C.....Vice-President.
GRUBAUGH, R. F.....Secretary.
FINLEY, MARY J.....Treasurer.

MEMBERS.

Ash, L. B. Ashland.
Bertolette, H. B., Shreve.
Boles, R. S., Mansfield.
Buchanan, J. W., Ashland.
Chisholm, H., Marion.
Clark, P. H., Ashland.
Cowan, F., Ashland.
Clouse, W. H., Crestline.
Craig, J. H , Mansfield.
Cullen, J., Lucas.
Denman, W. C., Marion.
Duncan, A. M., Bucyrus.
Erwin, A. J., Mansfield.
Erwin, J. W., Ashland.
Faber, Wm., McZenia.
Findlay, Mary, Mansfield.
Francis, D. R., Mansfield.
Gibbons, H. B., Tiffin.
Grubaugh, R. F., Mansfield.
Harding, Benj. F., Mansfield.
Hedges, J. S., Mansfield.
Hershiser, John S., New Washington.
Hise, A H., New Washington.

Huffman, O. L., Galion.
Inhoff, L. M.. Mansfield.
Kallmartin, F. G., Mansfield.
Kendig, W. C., Hayesville.
King, J. I., Martel.
Kipp, A. E., Mansfield.
Larimore, F. C., Mt. Vernon.
Latimer, R., Newark.
Loughridge, Wm., Mansfield.
Maglott, John, Mansfield.
Martin, J. C., Marion.
McArthur, J. A., Mansfield.
McBride, J. L., Mansfield.
McCollough, A. H., Mansfield.
McMillan, D. C., Mansfield.
Mecklem, Wm. S., Lucas.
Merriam, Georgia, Bucyrus.
Meyers, J. A., Shelby.
Mitchell, George, Mansfield.
Potter, L. B., Fredericktown.
Reed, R. Harvey, Columbus.
Reinhart, W. H., Polk.
Rhu, A., Marion.
Russell, J. E., Mt. Vernon.
Ruese, H., Mansfield.
Sattler, G. P., Mansfield.
Sherrick, A. L. (A. C. M. S.), Ashland.
Smith, H. H., Lexington.
Stevens, J. L., Mansfield.
Stewart, J. S., Mansfield.
Sykes, W. H., Plymouth.
Sykes, R. D., Chicago Jct.
Thomas, F. W., Marion.
Trimble, C. E., Crestline.
Uhler, H. L., Marion.
Warner, C. J., Congress.
Wells, J., Marion.

North-Western Ohio Medical Association.

AUXILIARY SINCE 1869. ANNUAL MEETING IN DECEMBER.

GRAEFE, CHAS ---------- President.
PHILLIPS, C. W ---------- First Vice-President.
SLOCUM, CHAS ---------- Second Vice-President.
GEHRETT, T. M ---------- Treasurer.
BAKER, J. P ---------- Secretary.

MEMBERS.

Anderson, W. V., Toledo.
Archer, J. D., Holgate.
Archer, J. R., North Baltimore.
Aris, Jas. F., Toledo.
Ashton, E., Lima.
Bain, F. D., Kenton.
Baker, J. P., Findlay.
Baldwin, J. F., Bluffton.
Baning, J. C., Belle Centre.
Barringer, D., Rocky Ridge.
Bates, F. L., Lima.
Baxter, S. A., Lima.
Beaghler, A. C., Middle Point.
Beardsley, C. O., Ottawa.
Beardsley, C. T., Ottawa.
Becker, Bernhart, Toledo.
Beckwith, S. W., Toledo.
Begg, W. H., Columbus Grove.
Belt, W. A., Kenton.
Benner, C. T., Tiffin.
Berlin, C., Wapakoneta.
Bessey, J. M., Toledo.
Binder, Albert, Ottoville.
Bird, S. H., Dupont.

Bishop, S. P., Delta.
Blaine, H. G., Toledo.
Blaine, S. P., Toledo.
Bland, J., Bucyrus.
Bloomfield, John, Napoleon.
Bodman, L. H., Toledo.
Bond, J. W., Toledo.
Borman, Adam, Glendorf.
Bowen, Geo. W., Toledo.
Bowers, I. S., Perrysburg.
Bowman, J. L., Coldwater.
Brattain, G. E., Payne.
Brayton, A., Carey.
Brayton, W. G., Fostoria.
Bricker, J. W., Fostoria.
Bricker, W. R., Shelby.
Brigham, O. S., Toledo.
Brinkerhoff, D. H., Fremont.
Brooks, P. H., Lima.
Brunthaver, Frank, Maumee.
Burritt, W. H., Toledo.
Burton, E G., Westminster.
Bush, Wm. H , Sandusky.
Byal, W. A., Findlay.
Caldwell, Wm., Fremont.
Calvin, J. H , Salem.
Campbell, L. W., Ada.
Caruthers, M. M., Findlay.
Cessna, B. F., Kenton.
Chamberlin, D. P., Toledo.
Chapman, W. C., Toledo.
Cherry, Wm., Toledo.
Chesney, J., Marseilles.
Chesney, John A., Bucyrus.
Chilcote, C. H., Bloomdale.
Clark, J. R., Bluffton.
Clevenger, A. E., N. Washington.
Clippinger, J. S., West Cairo.
Cole, C. B., Grand Rapids.
Cole, C. S., Toledo.
Cole, W. C., Rockford.
Collamore, Geo. A., Toledo.
Cosgrove, Thomas, Toledo.
Cramer, W. S., Ohio City.
Craver, Belle S., Toledo.
Crooks, R. L., Convoy.
Curry, John H., Toledo.
Curtis, C. L., Lima.
Davis, John, Gomer.
Day, H. M. Pandora.
Deemer, H. E., Castalia.
DeVilbiss, Allen, Toledo.
Dickey, W. A., Tiffin.
Dimoke, Eli, Dupont.
Dine, C. L., Minster.
Dix, S. E., Van Wert.
Donnelly, Jas., Toledo.
Downs, Samuel, Waterville.
Duncan, Jas. A., Toledo.
Durbin, R. M., Woodville.
Eakin, T. E., Columbus Grove.
Entriken, F. W., Findlay.
Evans, J. R., Ada.
Ewing, F., West Cairo.
Ewing, M. Jay, Findlay.
Faber, C. A., Toledo.
Files, C. A., Van Wert.
Firmin, F. W., Findlay.
Fisher, A. W., Toledo.
Fisher, W. H., Toledo.
Foltz, T. H., Lima.
Forbes, S. F., Toledo.
Gardiner, John, Toledo.
Gardiner, W. G., Toledo.
Gebrett, T. M., Deshler.
George, E., Van Buren.
Gibbon, H., Tiffin.
Gillette, W. J., Toledo.
Glenn, L. C., Kenton.
Glenn, Mrs. G. C., Van Wert.
Godfrey, C. M., Ottawa.
Goeble, Anna M., Lima.
Graefe, Chas., Sandusky.
Green, C. S., Fostoria.
Greenfield, Edgar J., Haskins.
Guise, J. M., Findlay.
Guise, P. O., Findlay.
Haines, J. B., Lima.
Haley, J. S., Napoleon.
Hamilton, H. A., Perrysburg.
Harmon, C. E., Delphos.
Harper, W. H., Lima.
Harrison, E. B., Napoleon.
Hartman, G. W., Wauseon.
Hasencamp, O., Toledo.
Hathaway, H., Toledo.
Hattery, J. E., Celina.
Havighorst, H. S., Toledo.
Haynes, J. T., Sandusky.
Heard, E. N., Sandusky.
Heckerman, J. U., Tiffin.
Heistand, E. B., Kenton.
Heller, F. S., Oak Harbor.
Heller, J., Grand Rapids.
Henderson, Geo. W., Vaughnsville.
Henry, A. G., North Baltimore.
Hermann, S. S., Lima.

Hersh, E. G., McComb.
Hetrick, J. S.. Dunkirk.
Hickey, W. H., Leipsic.
Higbie, J. G., Jenera.
Hill, W. W., Weston.
Hiner, S. B.. Lima.
Hines, J. A., Van Wert.
Hitchcock, S. A., Elida.
Hixson, M. M., Dupont.
Hoag, D. E., Toledo.
Hoag, H. P., Liberty Center.
Hoege, G. L., Fostoria.
Hover, W. E., Lima.
Howell, J. A., McComb.
Hubbard, Thomas, Toledo.
Huber, H., Ottawa.
Huntley, J. H.. Lima.
Hurd, A., Findlay.
Imhoff, C. E., Belmore.
Jenner, A. B., Arlington.
Jewell, N. W., Wauseon.
Jones, C. P., Nevada.
Jones, H. W., Van Wert.
Jones, R. E., Gomer.
Jones, W. A., Antwerp.
Kahle, A. W., Lima.
Kahle, R. D., Lima.
Keller, T. F., Tiffin.
Kinmont, T. C., Hicksville.
Kinnel, J. A., Findlay.
Kirkley, C. A., Toledo.
Kisbler, W. G., St. Marys.
Kitchen, F. A., Toledo.
Ladd, L. E., Middlepoint.
Lander, W. L , North Baltimore.
Landick, L. F., Lima.
Landman, Otto, Toledo.
Lathrop, A. B., Swanton.
Lawless, J. T., Toledo.
Lenhardt, P. J., Wauseon.
Leonard, B. B., West Liberty.
Leonard, B. S., West Liberty.
Levan, D. H., Mt. Victory.
Light, Frank, Ottawa.
Long, J. W., Bryan.
Longfellow, J. A., Fostoria.
Longsworth, W. N., Van Wert.
Lusk, S. B., Lima.
Lynch, Wm., Greenville.
McClung. J. C., Leipsic.
McConnel, D. W., Marseilles.
McCoy, Clem. D., Kenton.
McCullum, E. J., Tiffin.
McGavern, G. W., Van Wert.
McIlvane, W. H., Kenton.
McKellar, A. P., Green Spring.
McKinley, E. B., Vaughnsville.
McLachlan, N. L., Findlay.
McLeod, J. R., Findlay.
McLoughlin, C. C., Dunkirk.
McMillan, A., Genoa.
Maerker, A. E. H., Napoleon.
Manville, A. J., Bowling Green.
Marsh, J. M., Delphos.
Martin, J. C., Findlay.
Mattison, D. E., Lima.
Mauk, E. B., Delphos.
Merz, Chas. H., Sandusky.
Meyers, A. H., Carey.
Miller, C. S., Toledo.
Miller, J. M., Men-len.
Miller, W. L., Findlay.
Mills, C. H., Toledo.
Montgomery, W. H., Paulding.
Morgan, R. J., Van Wert.
Morris, Jos., Columbus Grove.
Mumaugh, Shelby, Lima.
Munn, H. E., Toledo.
Munson, A. W., Kenton.
Murback, A. J., Archibald.
Neville, W. S., Round Head.
Newman, J. E., Gilboa.
Noble, H. E., Stony Ridge.
Noble, J. G., Toledo.
Noble, N. T., St. Marys.
Nolen, J. G., Toledo.
Norris, M. M., Fostoria.
North, John, Toledo.
Nuding, W. H., Botkins.
Paul, T. E., Ottawa.
Pence, Leroy, Celina.
Perkins, C. E , Sandusky.
Phelps, C. H., St. Marys.
Philips, D. P., Kenton.
Philips, W. S., Belle Centre.
Pollock, S. J., New Hampshire.
Pontius, C. R., Fremont.
Potts, Chas. N , Lima.
Powell, J. E., Findlay.
Pugh, F. H., Bryan.
Radebaugh, P., Celina.
Ramsbottom, I. J., Wabash.
Reed, C. H., Toledo.
Reed, E. J., Leipsic.
Reid, C. B., Van Wert.
Reid, J. L., Van Wert.
Reiff, C. T., Fremont.
Reinfrank, J. H., Perrysburg.

Reinfrank, W. H., Perrysburg.
Reinhart, J. C., Toledo.
Renneker, A. P.. Cincinnati.
Rhu, August, Marion.
Rice, Robert H., Fremont.
Richardson, D. H., Celina.
Richardson, E. O., Bowling Green.
Richardson, J. V., Fort Recovery.
Richey, J. A., Oceola.
Ried, Chas., Hector.
Rogers, J. A., Kenton.
Root, H. A., Toledo.
Rudy, A. S., Lima.
Rush, D., Celina.
Sager, J., Celina.
Sager, N., Jr., Herring.
Saxauer, C. F., North Robinson.
Schlink, F. H., New Reigel.
Schnetzler, H. M., Toledo.
Shaffner, J. F., Wilshire.
Sherrard, A. C., Broughton.
Skinner, S. W., Toledo.
Slager, J. L., Paulding.
Slocum, Chas., Defiance.
Small, W. W., Van Wert.
Smalley, W. M., Ohio City.
Smith, C. H., Kenton.
Smith, C. N., Toledo.
Smith, D. C., Dunkirk.
Smith, Wm.. Van Wert.
Smith, W. M., Van Wert.
Snodgrass, Jesse, Kenton.
Souder, R. L., Nevada.
Speece, N. V., Quincy.
Stamm, M., Fremont.
Stancell, J. A., Forest.
Steiner, D. W., Lima.
Steiner, W. E., Van Wert.
Stemen, H. G., Delphos.
Steuber, F. G., Lima.
Steuber, L. J., Lima.
Stevens, M. B.. Defiance.
Stewart, J. M., Oak Harbor.
Stewart, W. D., Toledo.
Swimley, W. A., Forest.
Terwillinger, T., Lima.
Thacker, L. G., Defiance.
Thomas, O. H., Fremont.
Thomson, John C., Rollersville.
Thorn, S. S., Toledo.
Thrift, J. T., Columbus Grove.
Tobey, H. A., Toledo.
Todd, F. A., Toledo.
Tracy, J. L., Toledo.
Trovinger, J. R., Arlington.
Tuller, W. M., Bowling Green.
Tupper, C. G., Ottawa.
Tuttle, S. S., Van Wert.
Vail, Jonathan B., Lima.
Van Pelt, Chas. L., Toledo.
Virtue, F. M., Sulphur Springs.
Waddick, J. M., Toledo.
Wagar, C. P.. Toledo.
Wagner, H. P., Delphos.
Walker, R. G., Toledo.
Walters, J. W., Ada.
Ward, E. L., Cridersville.
Watters, R. L., Lakeside.
Weadock, T. M., Lima.
Wegg, John A., Oak Harbor.
Wert, L. J., Benton.
West, M. O., Mexico.
West, T. J., Tiffin.
Wetherill, I. R.. Bluffton.
Wilkins, J. A., Delta.
Wilkinson, E. L., Van Wert.
Willet, P., Elmore.
Willett, R. A., Elmore.
Williams, F. S., Kalida.
Williamson, M. S., Findlay.
Williard, G. Q., Tiffin.
Wilson, S. R., Celina.
Wilson, W. P., Van Loo.
Winders, Frank, Findlay.
Windisch, J. S., Port Clinton.
Wintermute, G. J. C., Celina.
Wintermute, G. J. C., Elmore.
Wood, W. I., Lima.
Woods, J. K., Van Wert.
Woods, Jos. T., Toledo.
Woods, Thos. E., Findlay.
Woodward, Geo., Oak Harbor.
Wordsworth, Miner, Hoytsville.
Wright, John A., Toledo.
Wright, J. B., Conroy.
Yingling, G. S., Tiffin.
Yoder, S. S., Lima.
Yost, W. W., Findlay.
Young, P. B., Crestline.
Zebald, A. M., Hector.
Zigler, H. H., Ayersville.
Zopfi, W. J., Findlay.

Pike County Medical Society.

AUXILIARY 1894.

HOOPER, W. H.----------President.
JONES, W. S.----------Vice-President.
SAMSON, W. S.----------Secretary.
BROWN, E. O. S.----------Treasurer.

MEMBERS.

Allard, L. D., Flat.
Andre, O. C., Waverly.
Brown, E. O. S., Beaver.
Bumgarner, A. E., Piketon.
Caldwell, J. L., Waverly.
Heath, J. R., Omega.
Hooper, W. H., Waverly.
Hunter, J. S., Piketon.
Hutt, A., Waverly.
Jones, W. S., Waverly.
Obrist, J. W., Beaver.
Roy, J. B., Omega.
Samson, W. S., Flat.
Tidd, E. W., Wakefield.
Willson, C. H., Idaho.

Portage County Medical Society.

AUXILIARY SINCE 1869. ANNUAL MEETING IN JUNE.

BIETZ, A. J.----------President.
SPIERS, H. H.----------Secretary.

MEMBERS.

Applegate, F. C., Windham.
Bietz, A. J., Ravenna.
Hannum, E. S., Mantua.
Hiddleson, C. S., Atwater Station.
Hughes, A. P., Ravenna.
Leonard, C. S., Ravenna.
Orton, J. J., Randolph.
Page, H. M., Hiram.
Porter, C. H., Roodstown.
Price, E. W., Kent.
Proctor, G. M., Shalersville.
Sherman, A. M., Kent.
Sloan, Seth L., Freedom Station.
Smith, W. G., Ravenna.
Snow, C. A., Garrettville.
Spiers, H. H., Ravenna.
Stevens, I. H., Ravenna.
Waggoner, Geo. J., Ravenna.
Waggoner, J., Ravenna.

Ross County Medical Society.

AUXILIARY SINCE 1876. ANNUAL MEETING IN APRIL.

LESLIE, J. M.....President.
BARNES, F. S.....Vice-President.
MIESSE, CHARLES.....Secretary.

MEMBERS.

Barnes, T. S., Chillicothe.
Barnes, J. W., Hallsville.
Cole, Alf. R., Chillicothe.
Cox, J. M., South Salem.
Drummond, P. K., So. Salem.
Evans, J. M., Clarksburg.
Evans, T. W., Richmondale.
Franklin, G. S., Chillicothe.
Galbraith, E. J., Chillicothe.
Gorslene, G. L., Chillicothe.
Hall, W. A., Chillicothe.
Hanley, J. M., Chillicothe.
Hughey, W. F., Yellow Bud.
James, Chas. B., Kingston.
Jones, Jennie, Chillicothe.
Lash, J. M., Chillicothe.
Leslie, J. M., Chillicothe.
Lightner, S. C., Hallsville.
McKee, R. H., Bainbridge.
Macklin, F. M., Adelphi.
Matthews, J. M., Clarksburg.
Meggenhoefen, E., Chillicothe.
Miessa, B. T., Chillicothe.
Miesse, Charles, Chillicothe.
Morgan, J. B. F., Clarksburg.
Moore, W. E., Chillicothe.
Pricer, W. E., South Salem.
Robb, H. H., Frankfort.
Robinson, R. D., Hallsville.
Robbins, G. E., Chillicothe.
Scott, D. H., Chillicothe.
Smallwood, E., Chillicothe.
Smallwood, I. M., Chillicothe.
Willshire, J. M., Gillespieville.
Van Winkle, J. B., Barnville.

Sandusky County Medical Society.

AUXILIARY SINCE 1880. REPORTED 1894.

ANNUAL MEETING IN DECEMBER.

WILSON, JAS. W.....President.
RICE, R. H.....Secretary.

MEMBERS.

Bowman, D. E. (Removed) Toledo
Brinkerhoff, D. H., Fremont.
Caldwell, Wm., Fremont.
Campbell, D. P., Green Spring.
Durbin, R. W., Woodville.
Erwin, N. B., Gibsonburg.
Gessner, G. A., Fremont.
Gessner, L. S. J., Fremont.
Harnden, C. L., Clyde.
Lauterman, G. (Huron) Bellevue.
Pontius, C. R., Fremont.
Rice, Robert H., Fremont.
Robinson, L. E., Clyde.
Shipley, A. D., Burgoon.
Shipley, R. S., Burgoon.
Smith, G. E., Oberlin.
Stamm, M., Fremont.
Taylor, S. B., Fremont.
Thomas, O. H., Fremont.
Thomson, J. C., Rollersville.
Waters, R. L., Catawba Island.
Wilson, J. W., Fremont.

Shelby County Medical Society.

AUXILIARY SINCE 1852. ANNUAL MEETING IN DECEMBER.

GEYER, J. D.----------President.
SILVER, D. R----------Secretary.

MEMBERS.

Beeman, Park, Sidney.
Cable, Thomas B, Pemberton.
Carter, J. M., Jackson Center.
Costello, J. W., Loramie.
Geyer, J. D., Sidney.
Getsloff, Bruno, Wapakoneta.
Hamsher, J. F., Palestine.
Harbour, C. B. W., Anna.
Hollopeter, Jas. S., Houston.
Hussey, M. F., Sidney.
Johnson, C. E., Sidney.
LeFevre, Ed., Sidney.
McBurney, Edward, Jackson Center.
Milholland, Wm., Sidney.
Miller, J. F., Port Jefferson.
Parent, W. H., Lockington.
Sharp, B. M., Sidney.
Silver, David R., Sidney.
Smith, D., Hardin.
Speece, N. V., Quincy.
Tate, G. M., Botkins.

Stillwater Medical Society.

AUXILIARY SINCE 1873. ANNUAL MEETING IN JUNE.

(Reported in 1894.)

ZELLARS, W. A----------President.
COPELAND, D. W----------Secretary.

MEMBERS.

Anderson, B. G., Tippecanoe.
Black, H. C., Freeport.
Brannan, T. H., Canal Dover.
Brown, O. S., Londonderry.
Copeland, D. W., Piedmont.
Custer, G. D., Scio.
Groves, J. E., Uhrichsville.
Hobson, J. A., Flushing.
Howell, J. G., Freeport.
Johnson, J. D., Cadwallader.
McGavran, S. B., Cadiz.
McCurdy, S. L., Pittsburg, Pa.
Moore, E. D., Moorfield.
Pfouts, D. F., Freeport.
Price, C. H., Milnersville.
Pumphrey, R. J., Flushing.
Rosemond, W. B., Milnersville.
Snyder, D. J., Scio.
Spence, W. A., Germano.
Wallace, John, Deersfield.
Webster, J. V., Flushing.
Welsh, J. M., Deersville.
Zellars, W. A., Freeport.

Toledo Medical Association.

AUXILIARY SINCE 1857. ANNUAL MEETING IN JANUARY.

REINHART, J. C ---------- President.
BECKWITH, S ---------- Vice-President.
WAGAR, C. P ---------- Secretary.
COLLAMORE, GEO. A ---------- Treasurer.
NEWTON, C. W ---------- Cor. Secretary.
THORN, SAMUEL S ---------- Librarian.

MEMBERS.

Aris, James F., 1321 Washington.
Becker, Bernard, 616 Jefferson.
Beckwith, S. W., Main.
Bell, Albert, 1307 Dorr.
Bessey, J. Mortimer, 1814 Adams.
Betts, Chas., Tenth and Jefferson.
Bodman, Lewis H., Jefferson and 21st.
Bond, John W., 283 Tenth.
Brand, W. W., 1708 Adams.
Brewer, Lyman A., 625 Adams.
Brigham, Oshea S., 1704 Washington.
Chamberlin, David P., 314 Jefferson.
Chapman, Wm. C., 1710 Madison.
Cherry, Wm., 1314 Cherry.
Coldham, W. W., 332 Michigan.
Collamore, Geo. A., 132 Eleventh.
Cosgrove, Thos., Auburndale, Monroe.
Curry, John H., 713 Madison.
DeVilbiss, Allen, 1941 Warren.
Donnelly, Jas., 722 Washington.
Duncan, Jas. A., 1107 Broadway.
Ely, J. D., 1153 Oak, East Side.
Faber, Chas. A., 2014 Ashland.
Fella, F. J., 603 S. St. Clair.
Fisher, Albert W., 815 Erie.
Fisher, W. A., 815 Erie.
Forbes, Samuel F., 113 Superior.
Gifford, Wm. R., 2005 Adams.
Gillette, Wm. J., 705 Madison.
Grube, W. W., 1502 Collingwood.
Gundrum, W. H., 2041 Erie
Haag, Daniel, 1121 Washington.
Hasencamp, O., Cherry and Michigan.
Hathaway, Harrison, 1233 Miami.
Haynes, J. Purcell, 1125 Washington.
Heltman, Elmer, 338 Summit.
Heydrick, L. W., Washington and Eleventh.
Hubbard, Thomas, 205 Ontario.
Kirkley, Cyrus A., 1105 Jefferson.
Kitchen, Francis A., 2137 Jefferson.
Klauser, F. E., 520 Cherry.
Landman, Otto, Pythian Castle.
Lawless, Jas. T., 1205 Broadway.
Leslie, F. A., 207 E. Woodruff.
Liken, J. F., 2304 Cherry.
Lilly, J. W., 631 Division.
McInnes, J. P., 1619 Broadway.
Meagley, F. L., Nat. Union Bldg.
Newton, C. W., 2103 Maplewood.
North, John, 321 Superior.
Reed, Calvin H., 324 Logan.
Reinhart, Jas. C., 1519 Broadway.
Rieg, P. S., 338 Summit.
Root, Aaron D., 427 Huron.
Root, Henry A., 413 Superior.
Roulet, Charles, 1418 Cherry.
Royer, J. A., 138 Main.
Saulsberry, C. E., 433 Huron.

Schnetzler, H. Marcus, 726 Huron.
Schnetzler, J. U., 726 Huron.
Sharpe, W. J., 1238 Dorr.
Smith, C. N., 1921 Franklin.
Snyder, W H., 912 Jefferson.
Stewart, W. D., 1307 Superior.
Stortz, Chris, 404 Nebraska.
Suker, G. F., Jefferson.
Thorn, Samuel S., 506 Lagrange.
Timpany, Robt., Cherry and Bancroft.
Tindall, O. M., 1306 Adams.
Todd, F. H., Toledo Asylum.
Tracy, James L., 1708 Adams.
Wagar, Chas. P., Hotel Madison.
Walker, Hattie Davis, Vermont.
Wilson, E. P., East Toledo.
Woods, Elizabeth, 329 Huron.
Woods, Joseph T., Summit and Jefferson.
Van Pelt, Chas. L., Nineteenth and Jefferson.

Trumbull County Medical Society.

AUXILIARY SINCE 1868. ANNUAL MEETING IN MAY.

MOORE, L. G ---------- President.
WARD, C. S ---------- First Vice-President.
HAYS, R. P ---------- Second Vice President.
HARMON, J. D ---------- Secretary.
MINER, F. B ---------- Treasurer.

MEMBERS.

Beach, A. M., Mineral Ridge.
Brooks, A. J., Girard.
Casper, F., Newton Falls.
Chamberlin, C. G., Kinsman.
Fenton, C. S., Orangeville.
Good, S. D., Newton Falls.
Griswold, Elisha, Sharon (Pa.)
Harmon, Julian, Warren.
Harmon, J. D., Warren.
Hays, R. P., Vienna.
Jones, Allen, Kinsman.
Keene, J. F., Gustavus.
Leitch, A. J., Niles.
Lillibridge, D. S., Mesopotamia.
McCartney, John, Girard.
Miner, F. B., Warren.
Moore, L. G., Kinsman.
Page, H. M., Hiram.
Prichard, L. W., W. Farmington.
Rice, C. M., Newton Falls.
Root, H. L., Burghill.
Sabin, T. M., Warren.
Simpson, G. N., Warren.
Soverin, F. D., Braceville.
Stevenson, G. R., Hubbard.
Stewart, T. H., Church Hill.
Ward, C. S., Hubbard.
Ward, J., Cortland.
Wheeler, H. S., Niles.
Williams, M. L., Warren.

Tuscarawas County Medical Society.

AUXILIARY SINCE 1851. ANNUAL MEETING IN APRIL.

McCollam, J. A ---------- President.
Beers, A. M ---------- Vice-President.
Miller, A. T ---------- Treasurer.
Blickensderfer, Jos ---------- Secretary.

MEMBERS.

Beers, A. M., Newcomerstown.
Blickensderfer, Jos., New Philadelphia.
Brannan, T. H , Canal Dover.
Fox, F. F., New Philadelphia.
Fox, J. F., New Philadelphia.
Geutsch, D. C., New Philadelphia.
Gooding, J. J., Gilmore.
Goudy, J. W. S., Newcomerstown.
Groves, J. E., Uhrichsville.
Helms, F. G., Uhrichsville.
Hendershot, B. C., New Philadelphia.
Hewetson, H. L., Uhrichsville.
Hitchcock, J. L., Uhrichsville.
Hughs, L. H. Dennison.
Lower, G. F., Port Washington.
McCaluey, F. W., Uhrichsville.
McCollam, J. A., Uhrichsville.
McCurdy, S. L., Dennison.
McKean, Wm., Dundee.
Machaman, H. A., New Philadelphia.
Miller, A. T., Shanesville.
Patterson, C. N., Uhrichsville.
Quinn, D. E., Dennison.
Richards, T. J. W., New Philadelphia.
Russell, E. S., Tuscarawas.
Sawyer, C. H., Mineral Point.
Shanwecker, S., Shanesville.
Shutzback, J. C., Strasburg.
Smith, J. M., New Philadelphia.
Smith, T. H., New Philadelphia.
Thompson, S. R., Uhrichsville.
Weiss, Geo., Rogersville.
Welty, O. S., Canal Dover.
While, C. C., Somerdale.

Union Medical Association

OF COLUMBIANA AND ADJOINING COUNTIES.

AUXILIARY SINCE 1879. ANNUAL MEETING IN MAY.

Hoover, C. N ---------- President.
Miles, F. T ---------- Secretary.

MEMBERS.

Albright, G. W., E. Fairfield.
Ambler, C. P., Canton.
Anderson, Jas., Salem.
Bailey, W. N., East Liverpool.
Balinger, S. F., Alliance.
Barckhoff, Paul E., Salem.

Beach, A. M., Mineral Ridge.
Berlolette, ——., Leetonia.
Bossert, J., Washingtonville.
Brooke, G. W , Ellsworth.
Calhoun, John N., New Lisbon.
Calhoun, Wm. M., E. Liverpool.
Calvin, J., Salem.
Campbell, J. S., Wellsville.
Clark, W. R., East Liverpool.
Conklin, S. A., Canton.
Cope, A. L , Winona.
Dales, S. J., Alliance.
Douglass, J. A., Columbiana.
Farr, M. C., Westville.
Fausett, R. C., North Jackson.
Fawcett, Chas. L., Salem.
Gilmore, W. N., West Point.
Graham, L. L., New Lisbon.
Griselle, E., Salem.
Hammond, J. W., Wellsville.
Heck, Stanton, Salem.
Hill, A. J., E. Rochester.
Hobbs, W. A., East Liverpool.
Hoover, C. M., Alliance.
Hughes, W. K., Berlin Center.
Hulin, O. W., Greenford.
Johnson, L. L., Alliance.
Johnston, M., Alliance.
King, A. L., Youngstown.
King, F. M., Damascus.
Kurtz, Harry, Leentonia.
McCleary, D., Hanoverton.
McCleary, W. D., Homeworth.
McConnell, S. M., Wellsville.
McCready, S. R., Leetonia.
McFarland, W. S., Wellsville.
McGloughlin, J. V., New Lisbon.
Marquis, F. B., New Lisbon.
Mealy, H. M., Palmyra.
Miles, F. T., Salem.
Miller, D. J., North Benton.
Moore, F. P., New Lisbon.
Moore, Wm., New Lisbon.
Nevin, J. E., Negley.
Nevin, W. C., New Lisbon.
Ogden, C. B., East Liverpool.
Parke, B. R., Wellsville.
Pelley, H. J., Dungannon.
Portman, O. E., Canton.
Roach, J. A., Alliance.
Schiller, A. W., Salem.
Shaffer, H. H., Alliance.
Sturgeon, J., Leetonia.
Temple, J. C., Alliance.
Tressel, J. H., Alliance.
Tullis, R. H., Columbiana.
Walker, A. B., Canton.
Yates, John J., Hanoverton.
Yengling, A. C., Salem.

Union Medical Association of N. E. Ohio.

AUXILIARY SINCE 1870. ANNUAL MEETING IN FEBRUARY.

EBRIGHT, L. S ---------- President.
UPSON, H. S ---------- First Vice-President.
JACOBS, H. H ---------- Second Vice-President.
HOOVER, A ---------- Cor. Secretary.
SISLER, L. E ---------- Rec. Secretary.
CONN, ELI ---------- Treasurer.

MEMBERS.

Aldrich, C. J., Cleveland.
Allen, Dudley P. C., Cleveland.
Ambler, C. P., Canton.
Applegate, F. A., Windom.
Armstrong, H. A., Akron.
Baird, R. J., Creston.
Baker, A. R., Cleveland.
Baker, W. O., Louisville.
Barnes, S. P., Massillon.
Barnes, R. H., Youngstown.
Bauer, M. M., Lake P. O.
Bauer, F. J., Mogodore.
Beach, A. M., Mineral Ridge.
Blankenhorn, H., Orrville.
Bowman, D. S., Akron.
Boyd, J. P., Akron.
Brant, A. C , Canton.
Brant, E. D., Canton.
Brannan, T. H., Canal Dover.
Brashear, B. B., Cleveland.
Brintnall, A., Liverpool.
Britton, E. E., Doylestown.
Brooke, G. W., Ellsworth.
Bruner, W. E., Cleveland, 282 Prospect.
Bye, J. M., Canton.
Campbell, A. B., Canal Fulton.
Carnes, U. M., Canton.
Carpenter, E. G., Cleveland.
Casper, F., Niles
Cassiday, James H., Sharon.
Cayle, H. J., Canton.
Chapman, Byron, Copley.
Cleaver, J. U., Akron.
Conklin, S. A., Canton.
Conn, Eli, Akron.
Connor, H. E., Akron.
Corl, H. E., Middlebranch.
Cox, S. S., Lodi.
Crawford, Thos. P., Canton.
Davis, J. D., Kent.
Dawson, S. B., Sterling.
Dickson, J. A., Youngstown.
Douds, J., Canton.
Dougherty, L. E., Greentown.
Dutton, C. F., Cleveland.
Ebright, L. S., Akron.
Essick, G. C., Maximo.
Evans, C. H., Canton.
Everhardt, N. S., Wadsworth.
Everett, A. B., Litchfield.
Eyer, Alvin, Cleveland.
Fiester, H. A., Newton Falls.
Fisher, H. M., Akron.
Flickinger, L. E., N. Industry.
Folks, M. C., Canton.
Foltz, A. E., Akron.
Foshay, P. Max, Cleveland.
Fouser, A. K., Akron.
Frannfelter, Jas., Canton.
Furguson, J. W., Canaan.
Gardner, D. S., Massillon.
Gibson, R. D., Youngstown.
Gillette, G. S., Hinckley.
Greenamyer, P. S., Orrville.
Hard, E. G., Medina.
Haman, C. A., Cleveland.
Hamblin, R. F., North Royalton.
Harmon, J., Warren.
Harmon, J. D., Warren.
Heddleston, C. A., Atwater.
Herrick, H. J., Cleveland.
Hitchcock, E., Akron.
Hollis, C. W., Lafayette.
Hoover, A., Akron.
Hoover, C. F., Cleveland.
Hoover, E. F., Alliance.
Hough, W. S., Cuyahoga Falls.
Houston, W., O., Peninsula.
Hubbard, R. S., Cleveland.
Hudson, J. F., Canton.
Hudson, S., Medina.
Humiston, Wm. H., Cleveland.
Humphrey, E., Akron.
Hunter, T. S., Ashland.
Hunter, Thos., Seville.
Hutton, E. F., Minerva.
Jackson, Thos. W., Akron.
Jacobs, H. H., Akron.
Jacobs, W. C., Akron.
Johnson, L. L., Alliance.
Johnson, T. M., Canton.
Jones, F. S., Medina.
Kurtz, H. B., Letonia.
Landor, T. H., Canton.
Leberman, O. E., Akron.
Lee, J. L., Akron.
Leonard, C. S., Ravenna.

Leonard, W. W., Akron.
Loughead, B. B., Akron.
Lyman, C. N., Wadsworth.
McCartney, Jno., Girard.
McCauley, B. M., West Salem.
McConnell, L. G., Northfield.
McKean, Wm., Dundee.
McLean, J. T., New Philadelphia.
McMillan, D. H., Orrville.
Mantey, Chas., Minerva.
March, E. J., Canton.
Marchand, J. F., Canton.
Marquis, Thos. B., New Lisbon.
Marshall, S. A., Canton.
Martin, Jas., Fredericksburg.
Miller, M. F., Wadsworth.
Miller, T. Clarke, Massillon.
Millikin, C. W., Akron.
Millikin, B. L., Cleveland.
Miner, A. G., Niles.
Miner, F. B., Warren.
Montgomery, R. H., Youngstown.
Moody, M. M., Chatham.
Morrow, E. O., Canton.
Morrow, E. P., Canton.
Murray, L. S., Medina.
Nash, E. K., Montrose.
Norris, C. E., Akron.
Orr, Chas., Salem.
Osborn, Mary E., Canton.
Parker, C. B., Cleveland.
Parks, Thos. C., Akron.
Peck, Geo. S., Youngstown.
Phillips, T. H., Canton.
Pixley, S., Akron.
Pontius, A. C., Louisville.
Pope, F. F. H., Dalton.
Portman, E. O., Canton.
Post, S. B., Canton.
Preble, Edward, Cleveland.
Price, R. F., Waynesboro.
Prichard, L. W., West Farmington.
Rabe, J. W., Akron.
Rams, G., Alliance.
Reed, F. C., Akron.
Reed, T. J., Massillon.
Roach, J. A., Alliance.
Roebuck, D. Y., Dalton.
Rosenwasser, M., Cleveland.
Russell, F. P., Suffield.
Sabins, T. M., Warren.
Sachett, W. A., Akron.
Schuffalt, H. M., Canton.
Scott N. Stone, Cleveland.
Scott, X. C., Cleveland.
Seiler, J. H., Akron.
Shelton, S. J., Navarre.
Sherman, A. M., Kent.
Sherman, H. G., Cleveland.
Shirey, J. L., Akron.
Simpson, G. N., Warren.
Sipher, J. N., Cleveland.
Sippy, A. F., Akron.
Sisler, L. E., Clinton.
Sisler, Adam, Nimisila.
Smith, D. B., Cleveland.
Smith, F. D., Hartville.
Smith, W. G., Ravenna.
Sorrick, J. W., Krumroy.
Spencer, E. R., Dolestown.
Sperry, W., Tallmadge.
Starr, L. J., Hudson.
Steele, W. C., New Berlin.
Stoll, J. H., Wooster.
Straight, H. S., Cleveland.
Sweitzer, L. S., Akron.
Taggart, H. D., Akron.
Temple, J. C., Alliance.
Theiss, H. C., Akron.
Todd, G. M., Akron.
Tressell, J. H., Alliance.
Underwood, E. S., Akron.
Upson, H. S., Cleveland.
Von Klein, C. H., Cleveland.
Waggoner, J., Ravenna.
Walker, A. B., Canton.
Waite, Jas. E., Lodi.
Wall, J. J., Mallett Creek.
Waldron, S. P., Akron.
Welty, Cullen F., Cleveland.
Whelan, R. E., Youngstown.
Williams, M. L., Warren.
Willy, A. G., Spencer.
Wilson, A. C., Youngstown.
Wirt, W. E., Cleveland.
Wise, S. P., Millersburg.
Wolfenstein, J., Cleveland.
Woods, A. T., Loyal Oak.
Workman, F. W., Akron.
Wright, S. J., Tallmadge.
Wuchter, Geo. H., Wadsworth.
Zeigler, C. R., Carrollton.
Zimmerman, H. A., Youngstown.

Warren County Medical Society.

AUXILIARY SINCE 1879. SEMI-ANNUAL MEETING IN OCTOBER AND MAY.

DEATH, H. J.....President.
MICHEL, R.....Vice-President.
HOUGH, C. A.....Treasurer.
STEVENS, E. S.....Secretary.

MEMBERS.

Bishop, L., Loveland.
Bishop, N. W., Loveland.
Blair, B. H., Lebanon.
Couden, J. T., Morrow.
Collins, J. B., Butterville.
Curry, G. M., Lebanon.
Darby, F. H., Morrow.
Death, H. J., Franklin.
Evans, R. S., Franklin.
Evans, O., Franklin.
Evans, F. R., Franklin.
Fisher, Herschel, Lebanon.
Flemming, Jas. C., Carlisle.
Frost, F. H., Lebanon.
Greenly, Wm., Knoxville, Tenn.
Hall, C. T., Mason.
Hough, C. A., Lebanon.
Hough, J. B., Waynesville.
Keever, B. W. D., Centerville.
Kreiger, G. L., Madisonville.
McCready, James, Monroe.
Michel, Ralph, Springboro.
Moss, W. F., Maineville.
Mounts, Leonard, Morrow.
Mounts, J. L., Morrow.
Murphy, A. D., Cincinnati.
Oglesby, Wm. E., Waynesville.
Roberts, A. C., Morrow.
Scoville, S. S., Lebanon.
Sewel, S. G., New Burlington.
Scott, Wm., Loveland.
Scott, John, Loveland.
Shafer, W. O., Ridgeville.
Stevens, E. B., Loveland.
Stevens, E. S., Lebanon.
Stevens, S., King's Mills.
Tickenor, E. J., Lebanon.
Vanderwort, J. W., Harveysburg.
Ward, J. W., Lytle.
Williams, D. A., Franklin.
Witham, J. E., Harveysburg.
Wright, J. W., Red Lion.
Wright, A. Y., Blueball.

Washington County Medical Society.

AUXILIARY SINCE 1886. ANNUAL MEETING IN MAY.

MCKIM, F. E.....President.
HILL, ED.....Vice-President
EDDY, C. W.....Secretary and Treasurer.

MEMBERS.

Adair, S. G., Beverly.
Athey, R. W., Barlow.
Ballard, C. B., Belpre.
Bohl, John, Sr., Watertown.
Bohl, Jacob, Marietta.
Cotton, J. D., Marietta.
Coke, E. P., Athens Asylum.
Eddy, C. W., Marietta.
Flemming, A. C., Stanleyville.
Funk, H. H., Beverly.
Gale, Geo. T., Newport.
Gage, R. S., Qualey.
Hadley, Jas., Masterton.
Hardy, M. V., Marietta.
Hardy, John C., Marietta.
Hardy, James M., Whipple.
Hart, Samuel, Marietta.
Hart, R. B., Jr., Marietta.
Hill, E. W., Sitka.
Kelley, P. H., Waterford.
McKim, F. E., Marietta.
McClure, Jas., Marietta.
McGee, F. S., Belpre.
Metcalf, W. V., Reno.
Morrison, E. B., Marietta.
Noland, John G., ———
Parks, J. A., Brown's Mills.
Peoples, L. W., Bartlett.
Reynolds, N. M., Bartlett.
Skivington, John, Marietta.
Sparling, F. R., Gasville.
Taylor, J. R., Archer's Fork.
Trickle, E. H., Cutler.
Ward, J. W., Archer's Fork.
Warren, W. W., Newport.
Waters, Chas. T., Marietta.
West, W. L., New Matamoras.
Warren, L. E., Reno.
Willis, O. M., Marietta.

Wayne County Medical Society.

AUXILIARY SINCE 1850. ANNUAL MEETING IN APRIL.

BATTLES, WM. S. (deceased)----------President.
BEER, J. D----------Secretary.
LIGGETT, GEO----------Treasurer.

MEMBERS.

Barrett, Jos. E., Wooster.
Battles, Wm. S., Shreve.
Beer, Jas. D., Wooster.
Carlin, G. A., West Salem.
Ferguerson, J. W., Canaan.
Greenmeier, P. S., Smithville.
Hart, Hugh A., Wooster.
Lerch, Chas., Wooster.
Liggett, Geo., Wooster.
Martin, Jas., Fredericksburg.
McMillan, D. H., Orrville.
Moncrief, D. L., Orrville.
Stull, J. H., Canaan.
Taggart, W. W., Wooster.
Todd, Jos. H., Wooster.

INDEX.

Abdominal Hysterectomy, Technique of 379
Academy of Medicine of Cincinnati 440
Accidents of Cataract Operation, Some of the 254
Adams County Medical Society 443
Address in Medicine 86
Address of President 65
Allen County Medical Society 443
Anchoring the Kidney 237
Antitoxin in the Treatment of Diphtheria 130
Ashland County Medical Society 444
Ashtabula, Lake and Geauga Medical Society 444
Astigmatism, Trophic Disturbances of 280
Auxiliary Societies 7, 440
Baldwin, J. F., Technique of Abdominal Hysterectomy 379
Baldwin, J. F., Discussion on Uterine Retroflexion and Retroversion 228
Belmont County Medical Society 445
Blake, Francis W., Concerning the Treatment of Laryngeal Tuberculosis 320
Brown, J. E., Trophic Disturbances of Astigmatism 280
Brown County Medical Society 445
Butler County Medical Society 446
Case of Extensive Skull Injury 386
Cataract Operation, Some of the Accidents of 254
Celiotomy, Method of Preventing Thirst after 288
Central Ohio Medical Society 447
Champaign County Medical Society 448

Clarke County Medical Society 448
Clermont County Medical Society 449
Cleveland Medical Society 450
Clinton County Medical Society 449
Columbus Academy of Medicine 454
Committees, Standing 3
Contagion and Diagnosis of Scarlet Fever 330
Corlett, William Thomas, Notes on Dermatoses due to Vegetable Parasites 167
Corlett, William Thomas, Specific Urethritis in the Male 323
Crawford County Medical Society 455
Credulity, A Study in 65
Crile, G. W., Research into the Technique of Laryngeal Operations 198
Cuyahoga County Medical Society 456
Deceased Members 12
Delegates, List of 52
Delegate Members 437
Dermatoses due to Vegetable Parasites 167
Diphtheria, Antitoxin in the Treatment of 130
Diphtheria, Treatment of 140
Dixon, W. A., Discussion on Diphtheria 146
Eastern Ohio Medical Association 457
East Liverpool Medical Association 459
Entrekin, F. W., Discussion on Intestinal Obstruction 190
Entrekin, F. W., Discussion on Salpingitis 358
Erie County Medical Society 458
Eye Affections, Local Medication in 296
Fackler, J. E., Treatment of Diphtheria 140
Fayette County Medical Society 459
Fitzsimmons, J. F., Discussion on Uterine Retroflexion and Retroversion 225
Gallia County Medical Society 460
Gibbon, H. B , Rational Medicine 192
Gibbon, H. B., Discussion on Uterine Retroflexion and Retroversion 227

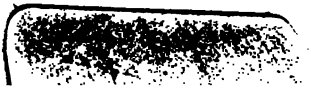
Gillette, Wm. J., Perforative Ulcer of the Stomach 231
Gilliam, D. Tod, Discussion on Pelvic Hematocele and Hematoma 374
Gonorrhea in Women, Plea against the Meddlesome Treatment of 300
Greene County Medical Society 460
Haldeman, J. S., Contagion and Diagnosis of Scarlet Fever 330
Halderman, S. S., Antitoxin in the Treatment of Diphtheria 130
Hall, R. B., Discussion on Uterine Retroflexion and Retroversion 225
Hall, R. B , Discussion on Anchoring the Kidney 242
Hall, R. B., Discussion on Pelvic Hematocele and Hematoma 376
Hall, R. B., Discussion on Abdominal Hysterectomy 383
Hancock County Medical Society 461
Hempstead Memorial Academy of Medicine 462
Heredity, Influence of 118
Hernia, Oblique Inguinal 155
Herrick, H. J., Discussion on Intestinal Obstruction 188
Herrick, H. J., Discussion on Uterine Retroflexion and Retroversion 224
Highland County Medical Society 462
Hildreth District Medical Association 463
Hoff, J. W., Discussion on Pneumonia 278
Holmes, C. R., Discussion on Cataract Operation 262
Holmes County Medical Society 464
Honorary Members 438
Hubbard, Thomas, Discussion on Antitoxin 138
Humiston, Wm. H., Method of Preventing Thirst after Celiotomy 288
Humiston, Wm. H., Discussion on Acute Gonorrhea in Women 307
Humiston, Wm. H., Discussion on Puerperal Sepsis 343
Humiston, Wm. H., Discussion on Salpingitis 357
Hysterectomy, Abdominal 379
Intestinal Obstruction 175
Is it Grip or—what ? 214
Jackson, T. W., Case of Extensive Skull Injury 386
Jefferson County Medical Society 464

Kidney, Method of Anchoring ..... [illegible]
Kimmell Bill ..... [illegible]
Kinsman, D. N., Discussion on Skull Injury 391
Kline, P. J., Discussion on Antitoxin 138
Kline, P. J., Discussion on Pneumonia 277
Lachrymal Obstructions 309
Larimore, F. C., Discussion on Hernia 165
Laryngeal Operations, Research into the Technique of 198
Laryngeal Tuberculosis, Concerning the Treatment of 320
Lawrence, F. F., Salpingitis 345
Lawrence County Medical Society 465
Lorain County Medical Society 465
Lucas County Medical Society 466
Mahoning County Medical Society 466
Malarial Organisms in connection with Typhoid Fever 361
Marion County Medical Society 467
Meigs County Medical Society 467
Melick, W. A., Lachrymal Obstructions 309
Members of the Ohio State Medical Society 412
Miami County Medical Society 468
Miami Valley Medical Society 469
Middle Ear, Serious Complications of Suppuration of the 314
Millikin, B. L., Some of the Accidents of Cataract Operation 254
Millikin, Dan, A Study in Credulity 65
Millikin, Dan, Biographical Sketch of 63
Military Medicine and Surgery 149
Montgomery County Medical Society 470
Morehouse, G. W., Discussion on Pneumonia 278
Muskingum County Medical Society 470
Neuroses of the Stomach 86
Nitroglycerine and Strychnine in the Treatment of Pneumonia 272
North-Central Ohio Medical Society 471
North-Western Ohio Medical Association 472
OBITUARY—
William S. Battles, M. D 393
Thomas Jefferson Barton, M. D. 394

OBITUARY.—Continued.
Henry C. Beard, M. D. 395
C. G. Comegys, M. D. 396
T. M. Cook, M. D. 398
Joseph Price, M. D. 399
W. J. Scott, M. D. 400
Officers 3
Oliver, J. C., Radical Cure of Oblique Inguinal Hernia 155
Otitis Media, Acute Purulent 264
Pelvic Hematocele and Hematoma 367
Perforative Ulcer of the Stomach 231
Pike County Medical Society 476
Pilcher, James E., Notes on the Present Status of Military Medicine and Surgery 149
Pilcher, James E., Address on Vivisection 15
Place of Next Meeting 46
Pneumonia, Treatment with Strychnine and Nitroglycerine 272
Portage County Medical Society 476
Puerperal Sepsis, Etiology and Prophylaxis of 335
Ransohoff, Joseph Surgical Treatment of Tubercular Lesion 244
Ransohoff, Joseph, Discussion on Anchoring the Kidney 241
Ransohoff, Joseph, Discussion on Thirst after Celiotomy 295
Rational Medicine 192
Reed, C. R., Discussion on Uterine Retroflexion and Retroversion 226
Reed, C. R., Discussion on Pneumonia 277
Reed, C. R., Discussion on Intestinal Obstruction 186
Reed, R. Harvey, Review of the Author's Method of Anchoring the Kidney 237
Report of Committee on Admission 23
Report of Committee on Ethics 48
Report of Committee on Finance 39
Report of Special Committee on Medical Legislation 30
Report of Standing Committe on Medical Legislation 41
Report of Committee on Publication 43
Report of Editor of Transactions 44

Report of Secretary 6
Report of Treasurer 27
Richardson, A. B., Influence of Heredity 118
Robb, Hunter, Causes and Mechanism of Retroflexion and Retroversion of the Uterus 217
Rosenwasser, Marcus, Plea against the Meddlesome Treatment of Acute Gonorrhea in Women 300
Rosenwasser, Marcus, Discussion on Intestinal Obstruction 189
Rosenwasser, Marcus, Discussion on Pelvic Hematocele and Hematoma 375
Ross County Medical Society 477
Salpingitis 345
Sandusky County Medical Society 477
Sawyer, John P., Some Observations of Malarial Organisms in Close Connection with Typhoid Fever 361
Scarlet Fever 330
Shelby County Medical Society 478
Skeel, R. E., Etiology and Prophylaxis of Puerperal Sepsis 335
Skull Injury, A Case of 386
Smith, Charles N., Pelvic Hematocele and Hematoma 367
Stamm, M., Intestinal Obstruction 175
Stillwater Medical Society 478
Stomach, Neuroses of the 86
Stomach, Perforative Ulcer of the 231
Straight, H. S., Discussion on Laryngeal Operations 212
Thomas, Frank W., Strychnine and Nitroglycerine in the Treatment of Pneumonia 272
Thompson, John A., Diagnosis and Treatment of Acute Purulent Otitis Media 264
Thompson, John A., Discussion on Laryngeal Operations 211
Thorner, Max, Serious Complications of Suppuration of the Middle Ear 314
Toledo Medical Association 479
Trumbull County Medical Society 480
Tubercular Lesions 244
Tuberculosis, Laryngeal 320

Tuckerman, L. B., Is It Grip or—What? ---- 214
Tuscarawas County Medical Society ---- 481
Typhoid Fever, Malarial Organisms in connection with ---- 361
Union Medical Association ---- 481
Union Medical Association of Northeastern Ohio ---- 482
Urethritis in the Male ---- 323
Uterine Retroflexion and Retroversion ---- 217
Ward, Dr., Discussion on Intestinal Obstruction ---- 187
Warren County Medical Society ---- 485
Washington County Medical Society ---- 485
Wayne County Medical Society ---- 486
Whittaker, James T., Neuroses of the Stomach ---- 86
Wilson, Dr., Discussion on Antitoxin ---- 137
Wright, J. W., The Use and Abuse of Local Medication in Eye Affections ---- 296

UNIVERSITY OF MICHIGAN
3 9015 06275 1410

UNIVERSITY OF MICHIGAN
3 9015 06275 1410